

MINING CONGRESS JOURNAL

JANUARY, 1938

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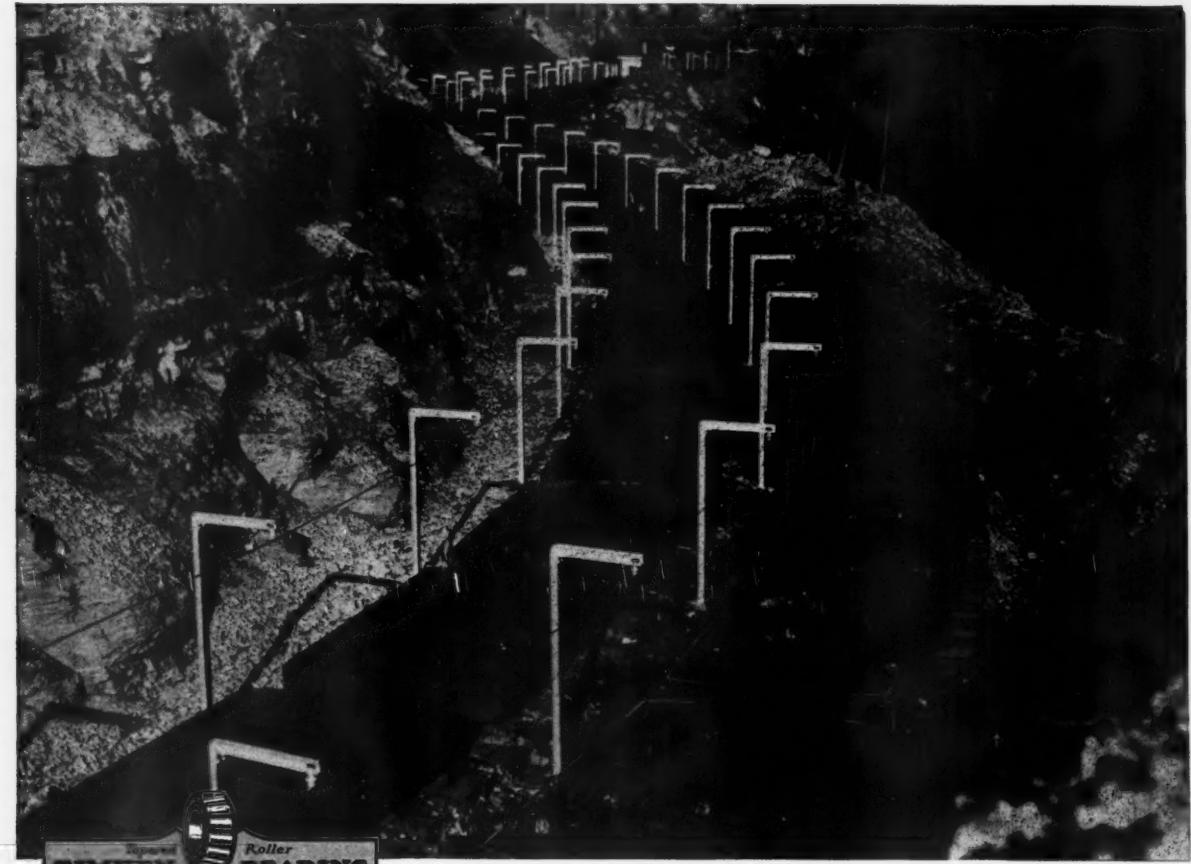
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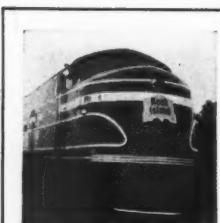
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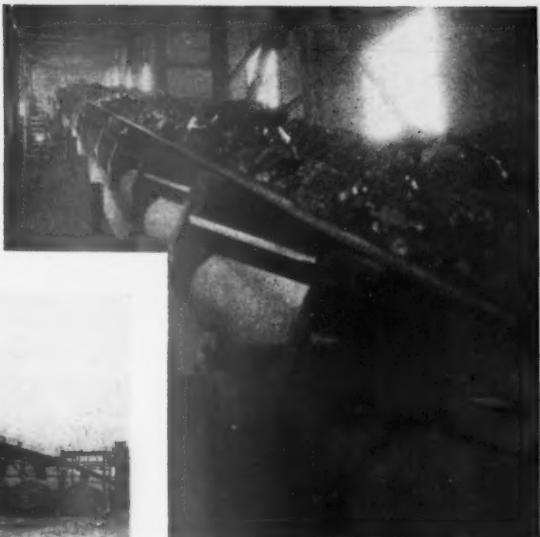
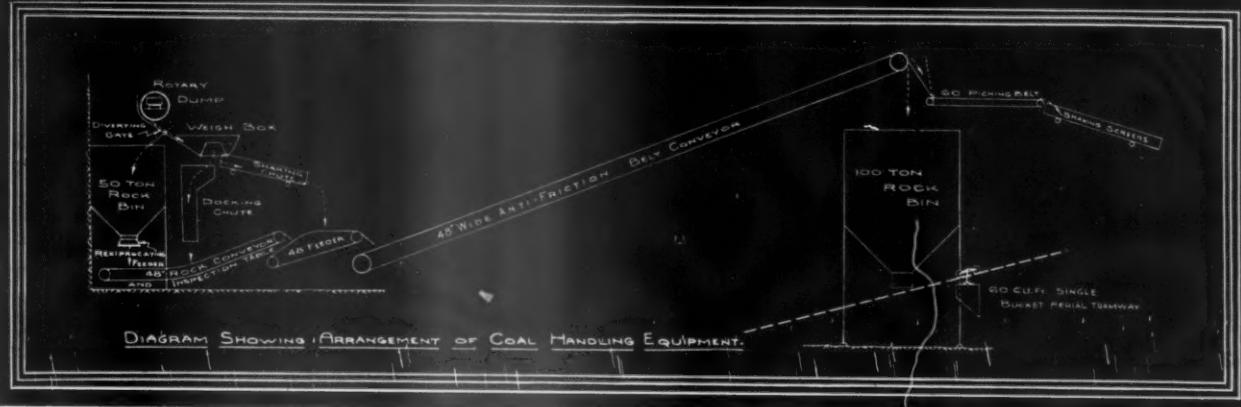
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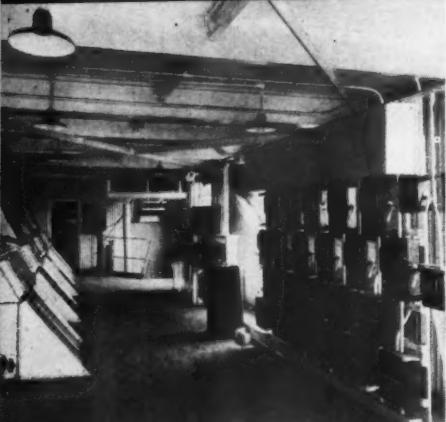
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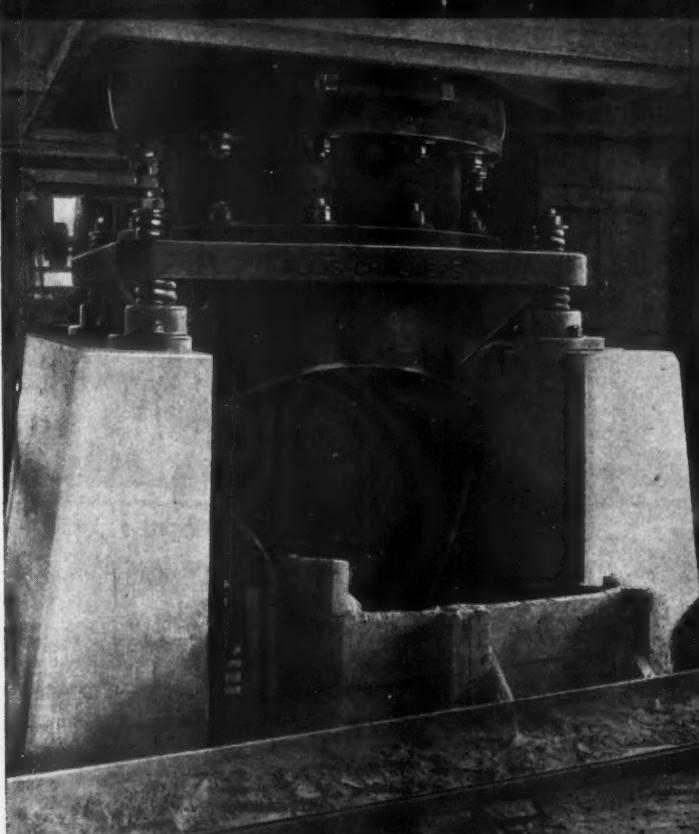
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MINING CONGRESS JOURNAL

In February

The February issue will feature 1937
Reviews of Important Branches
of Mining including:

Bituminous Coal
Anthracite
Coal Research and Technology
Iron Ore
Copper
Lead and Zinc
Gold and Silver
Mining Methods
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Mine Safety
Foreign Developments

Also the following Special Articles:

History of the Kanawha Field
Use of Meters and Demand Limiters
for Analyzing Power Costs
Treated Ties and Timbers at Zeigler
Multiple Rope Haulage in the Tri-
State District
Application of the Securities Act to
the Mining Industry with Discus-
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Opinions expressed by authors within these pages are their own, and do not necessarily represent those of the American Mining Congress.

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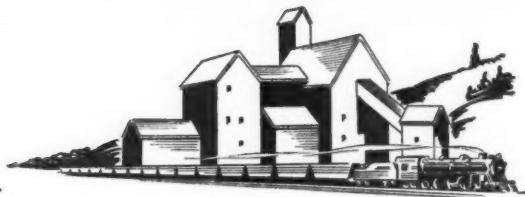
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Right About Face

THE *New York Times* in an editorial commenting on a recent address by Secretary of the Treasury Morgenthau describes it as a "highly reassuring statement, which lends the strongest support to the hope that instead of borrowing and spending more billions of dollars the Government will encourage private capital to assume the responsibility," and then says:

"There is every reason to believe that very large amounts of private capital would be available for investment in new business enterprises—in plant expansion, in new construction, in the cultivation of new markets—provided certain present policies of the Government were not a barrier to such investment.

"These policies have forced the dissipation of surplus funds as dividends.

"They have discouraged investment by carrying regulation to unreasonable limits in some cases.

"They have subjected business to increasing and unequal competition by the Government itself. And they have aroused fear that taxes even higher and more numerous than those which now prevail will be needed, finally, to bring the budget into balance."

This extended quotation is justified by the fact that the *New York Times* demonstrates its sympathy with certain objectives of the administration in the same editorial by the further statement that "It is not necessary for the Roosevelt administration to compromise its broad social purposes in order to tap these idle funds."

The writer disagrees with the *New York Times* in its thought that "the broad social purposes" of the administration can be preserved while an investing confidence can be developed which will meet Secretary Morgenthau's principle of "fostering the full application of the driving force of capital."

The "broad social" purposes of the administration required the disturbance of conditions under which industrial activity had been carried on during normal times.

If Congress would repeal all New Deal legislation designed to relieve the individual of the responsibility for the success or failure of his own enterprise; if it would give notice that one-half of all unnecessary social benefits would be discontinued at the end of six months and the other half at the end of one year; if it would reduce all Government expense 10 percent each year until the cost of National Government will be as low as during the first Wilson administration; if trustworthy assurances were given that taxes upon business will be reduced to the lowest point possible for a few years until business has regained its courage, and that thereafter as quickly as possible the public debt will be reduced and that the States thereafter shall assume their own social burdens as they have done during the greater part of history—if these assurances were given to the business world, *fifty billions of credit capital would be available almost immediately for the development of new enterprises, the activities of which would create a shortage of labor that would measure and limit the investments.*

By this time the administration should be convinced that fifty million people, each prosecuting that enterprise for which he is especially trained, which he has developed and in which his success will accomplish most, will get results.

The highest, the best and the most practical human incentive, that of intelligent selfishness, will succeed if given a chance. By this time it should be understood that centralized control of business and industry always has been and always will be a failure. The basis of our Government is decentralization, local self-control and individual responsibility.

A JOURNAL FOR THE ENTIRE MINING INDUSTRY—PUBLISHED BY THE AMERICAN MINING CONGRESS

MINING CONGRESS JOURNAL

Vol. 24

JANUARY, 1938

No. I

Richard J. Lund, Editor

HAPPY NEW YEAR!

AS the year 1937 bows itself out and 1938 is ushered in, the MINING CONGRESS JOURNAL wishes to extend heartiest greetings and best wishes to all its readers for a happy and prosperous New Year. It is particularly appropriate that such a message should be conveyed in this issue, which inaugurates many changes that have been in process of formulation for some time. We sincerely hope they meet with your approval, and shall greatly appreciate your comments concerning them.

To many of us, the New Year's bells may seem to resound with a certain dullness, as we view the present marked business recession. By comparison with conditions a year ago it is only natural that sobering thoughts should be with us. Just a year ago recovery was in full swing—metal mines were constantly increasing their production schedules to supply a strong demand for raw materials, with prices in the midst of a sharp rise; and although conditions did not show such a sudden improvement in coal mining, general industrial improvement was reflected in a sizable increase in demand for the product.

In the short span of four months industrial activity has taken probably the sharpest nose-dive in the history of the country, led by steel operations, which dropped from around 80 percent capacity to their present low, of about 20 percent. Copper is down to about 10 cents per pound, lead and zinc at 5 cents or less, with demand weak even at these relatively low price levels. Industrial inactivity together with late

winter weather have had their effect on demand for both bituminous coal and anthracite.

Yet there are aspects in the situation which afford the basis for a more optimistic view. It now appears that inventories have been pretty well drawn upon and that restocking will probably get under way again soon after the New Year. Recent strength in barometric scrap prices seems to point to early resumption of activity in the steel industry.

Minimum prices have finally been announced for bituminous coal and there is considerable sentiment that conditions will improve in that great industry through partial Federal regulation. It remains to be seen how cooperative the entire industry will be in maintaining these prices, and how effective policing will be in controlling the minority refusing to comply. Also, it is still a moot point as to the effect the higher prices will have in encouraging use of substitute fuels. Recent steps toward publicizing advantages of modern stoker equipment, together with the stronger impetus given to coal combustion research, are distinctly encouraging moves.

In so far as really basic factors are concerned, the outlook appears even more hopeful than a year ago. Administration tactics which have constantly kept industry uneasy and apprehensive as to the future have twice met decisive defeat during 1937 by a Congress which is at last asserting its independence. Tangible evidence that this movement is progressing is found in the recent formulation of a constructive program and the reassertion of fundamental principles of our democracy by a non-partisan Senate group seeking to encourage economic recovery and restore to Congress its lost prestige.

So, while superficial conditions are uncertain as the year 1938 opens, basic factors which underlie and control the business trend have a more hopeful gleam.

WORTHY PRINCIPLES

ONE of the outstanding opportunities afforded by an assemblage of individuals having a common interest is that of adopting after thorough discussion a set of principles concerning matters of public policy that is truly representative of the entire organization.

At the recent annual meeting of the American Mining Congress in Washington, leaders from all sections of the country representing important branches of mining drew up and adopted a set of resolutions that merit attention and consideration of every person even remotely interested in that great industry. Subjects covered in the resolutions include: Taxation, Government in Business, Social Security Reserves, Money, Securities and Exchange Commission, Reciprocal Trade Agreements, Labor, Roads, Water Pollution, and Public Domain. The complete declaration may be found on pages 56-57.

Critics may question the general value of resolutions and point out the difficulty of making them truly representative. Yet no one can deny the fact that the public is entitled to know and should be informed frequently as to the viewpoint of important industrial and business groups concerning public matters. True, it is difficult to find complete unanimity of opinion on every question with which the industry is concerned—there is always a minority differing with some of the viewpoints expressed. In the case of the American Mining Congress resolutions, however, such minority opinions were very minor indeed. Virtually complete agreement was reached on every point by the large and representative group discussing and formulating them.

To return to the matter of value of such declarations. It is not beyond the realm of possibility that those responsible for initiating and passing upon important legislation may view such statements as representing preponderant thought among their constituencies, and act accordingly. At any rate there is little tendency to scoff at their import. Unrelenting repetition by responsible groups of the necessity of adher-

ing to basic principles in democratic government is apparently bringing results. Recently a ten-point program, designed to encourage economic recovery and restore Congressional independence, was advanced by prominent members of the Senate, of both political parties, in an "Address to the American People" which will command the respect and support of all citizens interested in good government.

Without implying any definite causal relationship, it is gratifying to note the marked similarity of the Senators' program with the position taken in the resolutions of the American Mining Congress. Space precludes detailed comparisons, but generally speaking the Senatorial declaration urges the adoption of broad principles which have long been advocated by the mining industry.

JEFFERSONIAN ADVICE

IT IS heartening to note that responsible leaders in the administration are at last taking serious cognizance of the increasing public debt—which has continued to rise even during the last two years of returning prosperity, when reductions of indebtedness, both of individuals and of government, should be the order of the day. Treasury figures reveal that late in December, 1937, the public debt stood at about \$37.3 billion, compared with \$34.4 billion a year ago.

Eventually perhaps the following sage advice of Thomas Jefferson, written in 1813 to his son-in-law, Congressman J. W. Eppes, will be heeded by a sufficient number of legislators to effect the vitally needed balanced budget:

"It is a wise rule and should be fundamental in a government disposed to cherish its credit, and at the same time to restrain the use of it within the limits of its faculties, 'never to borrow a dollar without laying a tax in the same instant for paying the interest annually and the principal within a given term; and to consider that tax as pledged to the creditors on the public faith' . . . the necessity of an equivalent tax is a salutary warning to them (the taxpayers) against oppression, bankruptcy and its inevitable consequence, revolution."



Caples Tipple, Mine No. 11, New River & Pocahontas
Consolidated Coal Co., Caples, W. Va.

Photograph by Norfolk & Western Railway

POCAHONTAS PROGRESS in 1937

- **Closing Year Characterized as "The Darkest Hour," With Optimistic Views Concerning Future**

A SHARP recession in production during the last two months of the year caused a disappointment in the Pocahontas coal field in the tonnage which was confidently anticipated. Production reported by the Pocahontas Operators Association to December 5 was approximately 25,379,000 net tons. With four weeks to go it is not expected that this aggregate will exceed 27,000,000 tons, whereas the rate of weekly estimated production indicated that the high of 30,000,000, attained in 1929, was possible. This compares with a recent low in 1932 of 16,306,249 tons. It is possible that a shrinkage of a million to a million and a half tons of this loss might be found in the reduced shipments to the lakes,

By W. E. E. KOEPLER,
Secretary,
Pocahontas Operators Association

but the bulk of it is in the general recession of the last two months of the year.

The history of the market side of the industry is perhaps that of "the darkest hour," as few companies made any money, some broke even on outside investments, and others lost money especially on all coal accounts. Regulation of prices by the Government is looked forward to as the avenue for the correction at least of this aspect of the business; for, hence-



W. E. E. KOEPLER

forth, whatever tonnage is sold will return a profit to the operators. The uneven running time had a very bad effect on the miners, too, in that they prospered and spent freely and went in debt through the fore part of the year, and some lost their cars and instalment goods during the latter part. No rate of wages or regulation of hours and working conditions could counteract the miners' loss due to eco-



Trimming down loose coal in a Pocahontas District Mine

nomic conditions affecting his working time. Regulation may encourage the laborless fuels and further injure the miners' conditions.

Effect of Regulation a Question

There pervades this field, if not the whole industry, a feeling of uncertainty still as to what government regulation will bring forth, but many view the outlook hopefully. A cold analysis of the situation produces the conclusion that many of the industry's problems are still prevalent. The major of these is a deficiency in marketing ability and equipment, both in personnel and other facilities; and some companies are already making marked improvements in their selling arrangements and organizations in order to meet changed conditions. Others comment that in order to endure rising costs due to regulation it will be necessary to merge physical properties and sales organizations. The whole catalog of problems is reviewed and found still to need solution by the industry in its own ranks. Regulation on a cost basis leaves the competitive factor to be met, and beyond that the profit to be gained.

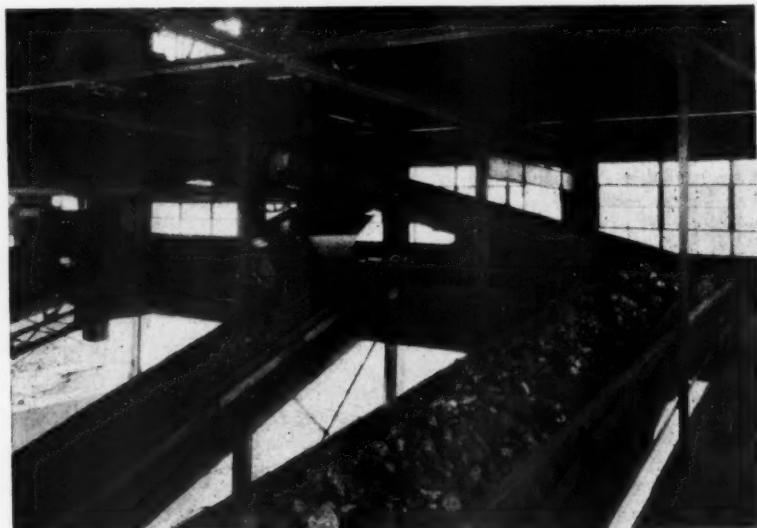
Early in the year there was considerable inquiry regarding the financial situations in the leading coal fields, especially the Pocahontas Field, by Wall Street houses seeking places for investments. Delay in price fixing caused these inquiries to subside, but the success of price fixing may bring about some activity on the financial side of the industry.

Labor Situation

Restrictions imposed on the industry locally and generally by labor regulation by the United Mine Workers have caused the revision of the whole labor set-up, disclosing particularly

pared with a labor census at Pocahontas mines in 1933 when the total was 17,500 men in the labor and supervisory forces, we now have 27,964 men in these same ranks. At this time it is true that there are three mines in the captive class which have closed down indefinitely, throwing out of employment about 1,000 men; but these are being absorbed, as there is one company reporting a shortage of 250 men. A very interesting observation also found in this census is that these mines report only 282 employable men out of work. In the class of the unemployable men are 1,048 men classified as mentally unfit, crippled (including automobile casualties), diseased or deformed, and loafers who won't work. The government census of unemployment will likely contain many men reported as unemployed, but this will be erroneous. The custom prevails throughout the whole Pocahontas coal field to spread employment equally to all men dependent on the companies for work.

It is likely unique that the operators and miners of the Pocahontas coal field have cooperated under union conditions with the same characteristic spirit that prevailed before. The union officials likewise have carried out their part of the contract another year without a single formal conciliation board case or umpire decision in the field. It should be said to the credit of the union officials, too, that they have engaged in many humanitarian undertakings, such as the Crippled Childrens' Association and various other movements to promote safety and healthful living among the men. These good works were possible because of the



Sizing Pocahontas coal preparatory to cleaning and loading

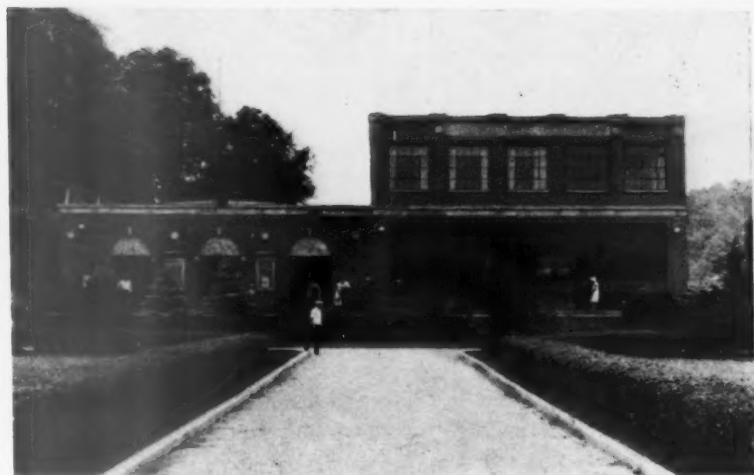
absence of the usual strife that has heretofore accompanied labor relations under union conditions.

During the year two of the older mines expired, Caswell Creek Coal & Coke Company and Powhatan Coal & Coke Company. Four great pioneer men passed on: Geo. L. Carter, founder of the Carter Coal Company and many enterprises; F. R. Wadleigh, peer of sales engineers; W. C. Stephenson, who established the Buckeye Coal & Coke Company; and Thomas L. Felts, the top of the special agents, who made the civilization of the Southern West Virginia and Virginia coal fields possible for maintaining law and order when it was hard to maintain. The ranks of the pioneers are thinning, but successors in direct line of descent are carrying on well.

Ventilation Changes

This being an era of repression, another restrictive influence on coal operation during the past year has been the activities of the State Mine Department and its inspectors. These have been carried to the limit of the law, if not beyond. This has caused the extension of ventilation facilities in the mines to the limit of physical conditions and has resulted in the installation of several of the world's largest fans. Many mines have adopted the newest types of fans, brought into vogue through developments in the aviation industry. Some mines have been compelled to switch from black powder to permissible explosives and some to such devices as Cardox. Routine regulations and a multiplicity of reports accounts for further expense to the operators. What once constituted confidential papers of the companies is now common material for reports to governmental bureaus. The tendency to require more and more reports is apparently on the increase.

There has been considerable overhauling of inside and some outside conditions at the mines, including the combining of a few mines for efficiency, and all steps have been in the direction of economy rather than expansion wherever this has been possible. There has been no money from profits for expansion, no confidence among investors for these purposes, labor conditions have held backward on mechanical progress, governmental regulation has provided additional uncertainty to prevent mechanical progress so that there has been little if any new building of plants and structures at the mines, except for necessary replacements. The tendency has been to push to completion with rigid economy all



Boissevain store and office, Pocahontas Fuel Co., Boissevain, Va.



Workers' homes in Landgraaff, W. Va.

advance work inside, or such tunnelling for drainage and ventilation as was compulsory. It is likely that there will never be any dwellings built by the coal companies as part of the plant, as current social tendencies are against the maintenance of residence towns by mining companies, more distant sources of labor now being available through improved highway systems.

A few more crushers were bought to complete tipple equipment as market conditions have compelled this, but there has not been a notable installation of new cleaning equipment.

Mechanization Conditions

Mechanization of the mines which has had some vogue in other mining districts has meant nothing in the Pocahontas Field. Their system of mining is not readily adaptable to the use of mechanical loaders, and the char-

acter of the coal is against profitable use of such heavy equipment. Pit car loaders have not been tried and a fallacious day rate and no tonnage rate prohibits the use of conveyor loading sets. There is only one such installation in the Pocahontas Coal Field. A few experiments are still going on with mechanical conveyors, but there is not much promise of their general adoption soon.

As indicated above there has been some substantial organization work along safety lines and progress is being made which gives promise of better safety records in the Pocahontas Coal Field. With the cooperation of the union in prospect the situation as to safety is much more hopeful.

Transportation facilities afforded by the Norfolk and Western Railway continue to be adequate, but the freight charges are becoming more and



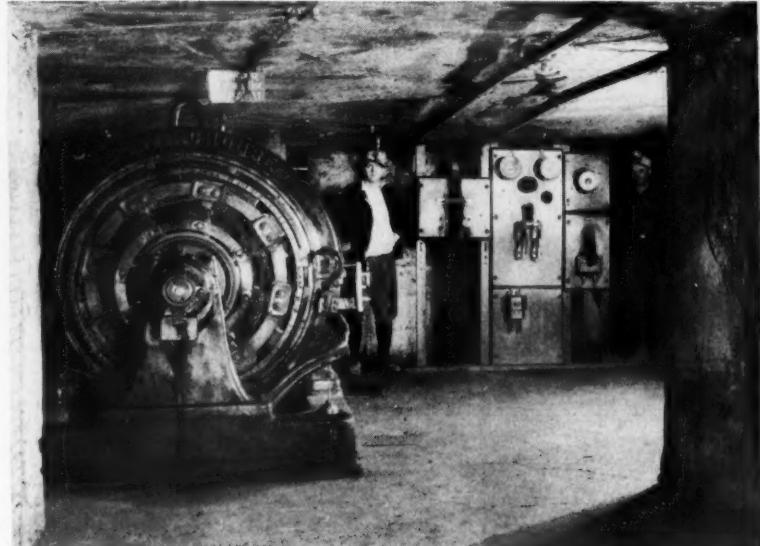
Photograph by Norfolk & Western Railway

Rock-dusted permanent entries in Pocahontas District

more restrictive in many markets. The history of the Pocahontas Coal Field continues to be one of conquest in one market after another on the merits of the coal only to be pushed further on to other markets in turn as freight charges, the competition of laborless fuels and many other competitive factors routs it out of the position of fuel satisfaction which it earns with consumers so readily. Probably the greatest of all the handicaps are transportation charges and difficulties resulting, it is often alleged, from excessive governmental regulation and meddling. Whatever the cause, the result is the same to the solid fuel industry.

Combustion Education and Research

Coal conferences have come in for particular encouragement by the Pocahontas Operators Association in a number of the consuming states and at the base selected for a master conference at the University of West Virginia. A coal conference is the name given to a symposium of papers and discussions on coal and its use by authorities on coal, stokers, by-products, combustion, etc., under the auspices of the coal associations—operating, wholesale and retail,—and similar organizations in allied lines, as well as interested educational institutions and the trade and technical publications. The movement is headed toward one of the most successful careers in the coal industry, and is



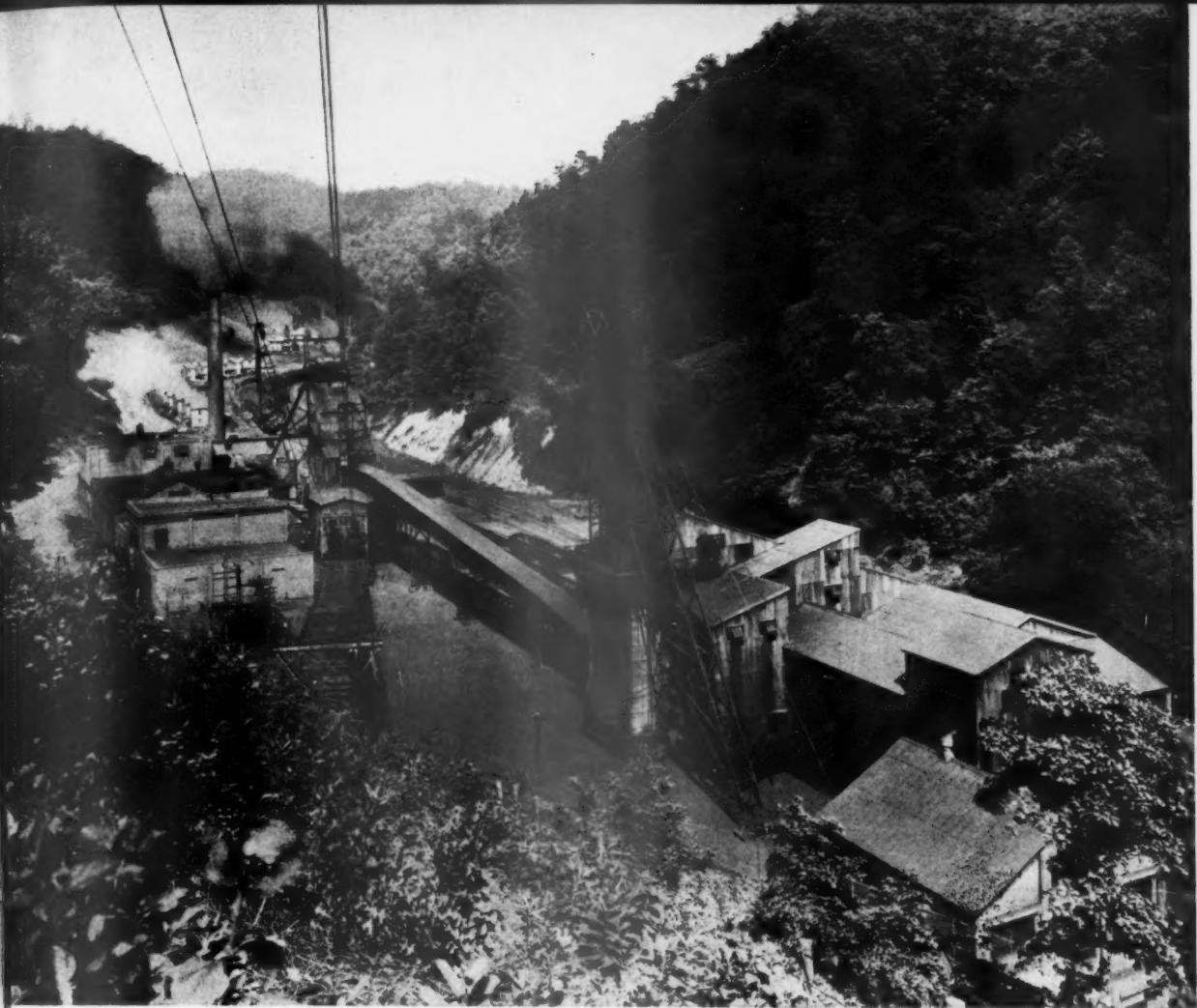
Photograph by Norfolk & Western Railway

Inside substation, Algoma C. & C. Co., Algoma, W. Va.

also very active in many other industries. It fits into the new order of things which requires education throughout the life of business and business men. Research is also a part of the plan.

Research in coal is expected to be given its greatest impetus under the National Bituminous Coal Commission, as the law permits it great freedom in the use of personnel and funds for research purposes. Pocahontas operators and their Association are active

gurated by the Pocahontas group years ago. Actuated by the premise that if every coal was sold by its true name in all markets for purposes for which each was suited there would be no coal problem requiring a governmental guardianship of the industry, Pocahontas operators have pioneered in sound trade ethics. The law now requires honest merchandising and there is hope that the Commission will be able to enforce sound merchandising which
(Concluded on page 61)



Olga No. 2 shaft of the Carter Coal Co., Coalwood, W. Va.

VENTILATION at the Olga No. 2 Mine of CARTER COAL COMPANY

- *New Air Shaft and Fan, Plus "Streamlining," Solve Ventilation Problem*

THE Olga No. 2 Mine of Carter Coal Company, located at Caretta, W. Va., operates in the Pocahontas No. 4 Seam which at this location lies at a depth of approximately 585 ft. below the surface. The mine is very gassy and ventilation is a major operating problem.

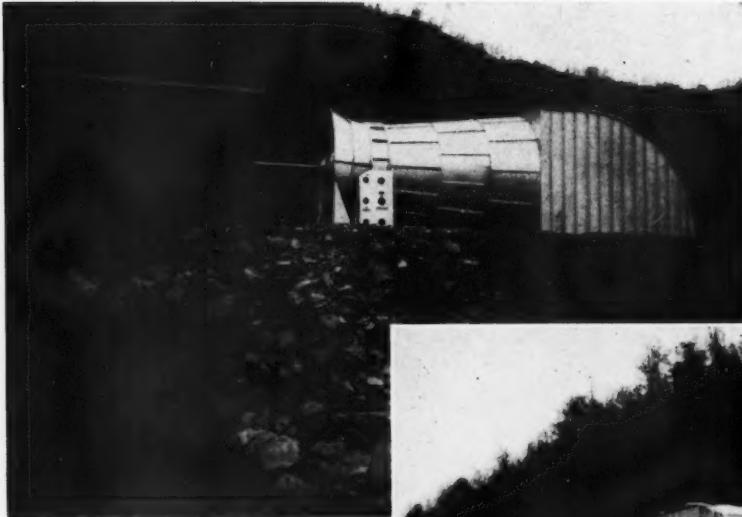
Three shafts were originally put down, consisting of a coal hoist shaft with an area of 229 sq. ft., a man and

material shaft with an area of 319 sq. ft., and a circular airshaft with an area of 227 sq. ft. The mine was ventilated by the force system, the airshaft being a downcast, while the other two shafts were upcasts. By using this system the dust from the tipple and hoisting shaft is not drawn into the mine as would be the case if the exhaust system were used. Coal is dumped from the mine cars by

By G. R. JENNINGS,

Division Superintendent,
Carter Coal Company,
Coalwood, W. Va.

means of a two car rotary dump which is located on intake air, and passes through loading chutes into skips of 15 tons capacity. The gates of the loading chutes serve as an air lock between the dump and the hoisting shaft. During the few seconds required to load the skip there is a



13-foot Aerodyne fan installation at Olga No. 2 Mine. View below shows explosion doors in steel hood

Photos courtesy of W. E. E. Koepfer



partial short-circuit of air which, however, has no noticeable effect on the ventilation back in the mine. By this arrangement, doors on the main haulway are avoided.

The original main ventilating unit consists of a 14 ft. x 6 ft. Jeffrey centrifugal fan directly connected to a Harrisburg steam engine rated at 575 hp., at 160 r.p.m. A complete standby unit, consisting of a 12 ft. x 6 ft. Jeffrey centrifugal fan connected to a 600 hp. Westinghouse induction motor by means of a 48-in. belt, can be put into operation with a change-over time of about three minutes, thus insuring practically continuous ventilation.

The importance of an adequate number of large clean airways has been realized and the mine airways have never been permitted to become choked. Work of cleaning and enlarging airways has been practically continuous with the result that, as the mine developed and the length of the airways increased, the mine resistance has not only been kept low but has been steadily reduced.

In spite of this it was found that, as the mine advanced and production increased the volume of air supplied by the 14 ft. x 6 ft. steam operated fan was inadequate for the mine if operated at maximum capacity.

Safety Precautions

The company takes every possible precaution to insure mine safety for its employes. In addition to six fire bosses, who examine the mine twice daily, a gas inspector is employed who measures and samples the air daily, on the splits and main returns, and

reports to the mine foreman and superintendent. Air samples are analyzed by the titration method.

The mine foreman, or his assistant, also measures the air weekly, on each split and at the last crosscut, and at the main intakes, keeping a record of same, as required by the mining law and company standards.

Edison Electric cap lamps and Koehler Safety Lamps are used. All equipment used underground, such as locomotives, mining machines, air compressors, pumps, etc., are of permissible type, operated from storage batteries. Permissible explosives are used exclusively and all blasting is done by shot-firers certified by the company.

Brick stoppings are standard, temporary stoppings being constructed with lime mortar to facilitate their removal and permit reusing the brick. Overcasts are used liberally and use of doors avoided as far as practical. Overcasts are constructed either of concrete throughout or with walls of natural sandstone, with concrete top-slab. The top-slab is reinforced with steel rails.

The mine is kept thoroughly rock dusted at all times.

Regardless of all these safety measures, at no time has there been any hesitancy on the part of the company in limiting tonnage to conform with safe practice, whether it required the stoppage of a single heading or curtailment of production from the entire mine.

Expanding Operations Required More Air

Increasing demand for the company's products and the limitations of the ventilating unit, therefore made it necessary to take steps to increase the volume of air delivered to the mine. In August, 1936, the 14 ft. x 6 ft. centrifugal fan was delivering 517,000 cu. ft. of air per minute, with a 5.5-in. water gauge at a fan speed of 171 r.p.m. The equivalent orifice using the formula

$$E. O. = .004 \frac{Q}{\sqrt{G}}$$

is 88 sq. ft. A comparative figure used by this company as a measure of mine resistance is the "W. G. (water gauge) per 100,000 cu. ft. per min-

ute." This figure is based on the theory that the water gauge varies as the square of the volume and represents the water gauge which would be necessary to force 100,000 cu. ft. of air per minute through the mine under the given conditions. Under the above conditions this figure was 0.204 in. per 100,000 cu. ft.

In considering the possibilities of increasing the volume of air, it was realized that the 14 ft. x 6 ft. fan was working rather close to maximum speed and capacity, the steam engine was overloaded and the air shaft, with a 17 ft. diameter, was also a limiting factor.

New Airshaft

It was decided to sink a new air shaft, closer to the workings, and install a modern fan of more efficient type to supplement the original fan. By doing so the area of the upcast and downcast shafts would be brought more nearly into balance while the combined capacity of the two fans was expected to be sufficient to ventilate the mine during the remainder of its life. Projections drawn up for this new intake shaft also include an upcast shaft near the same location, should future development make it necessary. Since the increased volume of air would have to be conducted through the same return airways and up the same shafts (the skip shaft and man shaft), work of enlarging these airways was started immediately. This work has been continued and accounts in part for some of the increase in volume as can be shown by comparison of the figures given above, as of August, 1936, with readings obtained approximately six months later.

Method of Measuring Air Volume

It might be well to describe the method used in measuring the air volume, since there can be and is considerable difference in results obtained when different men measure air with an anemometer.

First, all measurements are taken at established measuring points, the area of which has been carefully calculated and marked. Thus errors due to difference in area as measured at different times or by different men are eliminated. Since the same measuring point is used and the same area, even should a small error be made in computing the area, it would not affect comparative results.

Velocity is measured with an anemometer and corrections applied as given by the manufacturer. No at-

Gas report form used by Carter Coal Company

tempt has been made to obtain absolute accuracy beyond the point of practicability in measuring the velocity. The anemometer is held at a height equal to about one-half the height of the entry and at right angles to the air current while the operator moves slowly from one side of the entry to the other. The reading is taken for one minute. Greater accuracy would be obtained by dividing the area into small sections and measuring the velocity in each section and carefully averaging the readings. While this increased accuracy may be well worth while in special cases, it is not considered practical for everyday use. We find that experienced men, using the same anemometer, will not vary more than 2 percent in their results, when measuring the main intake volumes. While the volumes obtained by the above method are higher than those obtained when the cross-sectional method is used, and would not be suitable for determining the efficiency of the fan and drive, we

find it very satisfactory for daily comparisons under given conditions and equally suitable for comparing the performance of different ventilating units.

"Winker" Light Safeguard

Each fan is equipped with a separate water gauge mounted in the fan engine room and so connected with the fan drift as to register static pressure. Recording pressure gauges record the pressure and furnish a permanent record of the fan operation. In addition, a "winker" light, mounted in the engine room at the man hoist, where an engineer is constantly on duty, serves as a warning in case the fan should stop.

An average of the daily readings taken between January 1, 1937, and January 15, 1937, was as follows: volume of air 537,000 c.f.m.; water gauge 5.60 in.; fan speed 168 r.p.m. The equivalent orifice had increased to 91 sq. ft. while the water gauge per



Centrifugal fan installation

100,000 cu. ft. had been lowered to 0.190 in. The new air shaft, previously mentioned, was nearing completion at this time, but had not yet been connected to the mine entries, the increase in the volume of air over that of August, 1936, being due to work done enlarging and smoothing out the airways.

Grouting Air Shaft Effective

On January 15, 1937, the new air shaft was connected to the workings, having been sunk 756 ft. in less than seven months—June 20, 1936, to January 15, 1937. The new air shaft is circular in shape, concrete lined throughout and has an inside diameter of 20½ ft., with an area of 330 sq. ft. An interesting feature in the sinking of this shaft is the manner in which the heavy flow of underground water was grouted off. Five holes were drilled around the proposed location of the shaft, before sinking, and 6,602 bags of cement forced into these drill holes, the depth of which varied from 427 to 501 ft., all of which were well below the known depth of the water-bearing strata. So successful was this grouting that water was lowered into the shaft during sinking operations to control the dust from the drills. Equally important in the operation of the mine is the elimination of heavy accumulation of ice in the air shaft during the winter season, which has caused considerable trouble in the past at the 17-ft. air shaft. A full description of the sinking of this shaft has been published in the February, 1937, issue of *Compressed Air Magazine*.

Immediately after the shaft connected with the mine workings on January 15, 1937, until the installation of the electric fan, which

was put in operation September 26, 1937, the new air shaft was used as an upcast, the volume of air upcast at this shaft being limited by a regulator, for two reasons. One was the discomfort which would have been caused the men working on the arches at the bottom of the shaft, the other being the overload placed on the steam engine operating the 14 x 6-ft. fan, by the increased volume of air passing through it.

In the latter part of January, 1937, with 160,000 cu. ft. of air per minute upcasting at the new shaft the total volume of air had increased to 575,000 cu. ft. per minute with a water gauge of 5.35 in. and a fan speed of 167 r.p.m. In June, 1937, the volume had increased to 580,000 cu. ft., the water gauge lowered to 4.70 in. and the fan speed reduced to 162 r.p.m. The equivalent orifice had increased to 107 sq. ft. while the water gauge per 100,000 cu. ft. per minute was reduced to 0.140 in.

13-Foot Aerodyne Installed

The fan selected for installation at the new air shaft was a 13-ft. Jeffrey Aerodyne, being the largest of this type built at the time. This fan was direct connected to a 600 hp. General Electric synchronous motor operating at 600 r.p.m. It is connected to the top of the shaft by a steel fan drift with circular type hood to deflect the flow of air from the fan downward into the shaft. Explosion doors are built into the steel hood.

Under the arrangement the two fans, 13-ft. aerodyne and 14 x 6-ft. centrifugal, force air into a common intake, although more than 9,000 ft. apart. There is no separation or division of the air from the two fans, either on the intake or the return, except as the two pressures, acting from opposite directions, meet and balance each other at some point on the main intake. This meeting point, as observed on the main haulway, the most direct connection between the two air shafts, is approximately 7,000 ft. from the new air shaft and 2,600 ft. from the original air shaft.

with a water gauge of 5.65 in. delivered 246,685 cu. ft. per minute, or a combined total of 719,968 cu. ft. per minute.

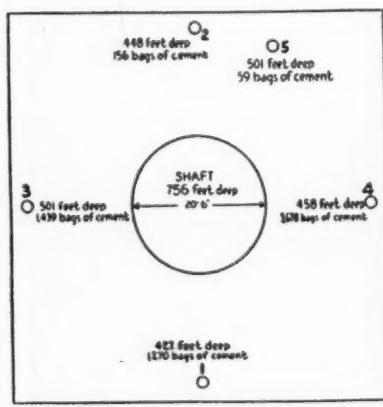
Power readings taken during the test at the electric fan indicate an electrical input of 570 hp. While actual measurements of the power input at the steam fan were not taken during this test, power readings taken shortly before and since indicate the power input to the steam engine as approximately 320 hp., or a combined power input of 890 hp., which compares with an indicated horsepower of 928 for the centrifugal fan operating alone and delivering 588,384 cu. ft. of air per minute against a water gauge of 4.8 in.

A similar test on the new fan, operating alone with the other air shaft closed gives the following results: volume 564,570 cu. ft. per minute; water gauge 5.10 in.; fan speed 600 r.p.m.; and power input to motor 531 hp. This confirms the claims made for the new installation that the power consumed would be reduced as the volume increased and water gauge decreased due to a lowering of the mine resistance. Therefore, any further work done to lower the mine resistance should result in more economical operation as well as increasing the volume of air delivered.

After the new fan had been put into operation it became possible and advisable to make certain changes inside the mine which could not be made prior to the change. For instance, the reduction in the volume of intake air now passing through certain airways made it possible to convert a part of these airways into returns, which was done. On the other hand, the greatly increased volume of intake air in that part of the mine contiguous to the new air shaft disclosed certain restricted areas and high velocities to be eliminated. While this work has not been completed it has progressed sufficiently to indicate the possibilities of the new ventilation system.

Air Volume Increased 50 Percent; Power Only 5.6 Percent

Recent measurements at the two fans, in December 1937, show the total volume of air entering the mine to be 773,938 cu. ft. per minute, divided as follows: aerodyne fan 494,060 against a water gauge of 6.30 inches, and steam fan 279,878 with a water gauge of 5.88 inches. Air measurements taken on the main returns, near the upcast shafts, on December 7, 1937, indicate that 815,110 cu. ft.



Plan of new air shaft, showing location of drill holes used in grouting off water

of air was passing out of the mine per minute, the difference being accounted for by the expansion of the air, due to difference in temperature on the main intake compared with that on the main return. The recent measurements recorded here were taken from the daily report of the gas inspector, no power readings being available for comparison. However, from power readings previously taken it would be safe to assume a total power input at the two fans of about 980 hp., or an increase of 5.6 percent over the power consumed at the steam fan when operating alone and delivering 588,384 cu. ft. per minute, the increase in the volume of air over the same period being 31.6 percent. However, going back to August 1936, as previously mentioned, the total volume delivered by the steam-driven fan was 517,000 cu. ft., so that the total increase obtained amounts to 256,938 cu. ft. per minute, or 49.7 percent.

The volume of air delivered to the mine at the present time is more than needed and should be ample during the entire life of the mine. There is now being installed a counter shaft with pulleys and "V" belts to permit operation of the new fan at 500 r.p.m., instead of 600 r.p.m. as at present. With this arrangement it is expected that, while the volume of air delivered by the fan will be reduced, this will be partly balanced by an increase in volume at the steam operated fan and, further, that there will be considerable saving in the cost of purchased power used to operate the new fan, without a corresponding

increase in the cost of operating the steam-driven unit.

As previously stated, all air volumes given here were determined by the usual method in use at the mine, for comparative purposes. In connection with the tests made on October 3, 1937, however, the volume of air was also determined by the more accurate cross-sectional method previously described. As was to be expected, the volume of air as determined by this method was considerably lower than that obtained in the usual way.

With the steam-driven fan also operating, the volume of air delivered by the new fan, as determined by the cross-sectional method, was 380,275 cu. ft. per minute. The water gauge was 6.45 in. and the power input 570 hp. as previously stated. From this the efficiency of the fan was calculated as 72.88 percent. With the steam fan stopped and its air shaft closed off, the volume of air delivered by the electric fan was 453,362 cu. ft. per minute, as determined by the above method. The water gauge was 5.10 in., the electrical input 530.97 hp. and the efficiency of the fan alone 73.85 percent.

In connection with the figures given as to the operation of the two fans, working together, comparative values for the equivalent orifice and the W. G. per 100,000 cu. ft. per minute have not been shown. If these values were computed separately for each fan the resistance against which each fan is operating would naturally be increased, since each fan is delivering only a portion of the total volume

against an increased water gauge. Thus, according to the most recent readings, the new unit is operating against an equivalent orifice of 79 sq. ft. and the steam fan against an orifice of 46 sq. ft. However, the equivalent orifice of the mine, taking the combined volume of the two fans, together with the higher of the two water gauge readings, is 123 sq. ft., which is the real indication of the ability of the mine airways to pass air. The water gauge per 100,000 cu. ft. per minute is 0.105 in. While a large portion of this decrease in mine resistance is due to the location of the new air shaft near the workings and the consequent reduction in the distance travelled by a major portion of the air, the work done in enlarging and cleaning up of airways can be shown to be an important factor.

"Streamlining" Not Now

Much has been said recently concerning streamlined ventilation. Carter Coal Company has not endeavored to streamline its ventilation in the extreme sense; yet, in so far as cleaning up falls in airways, enlarging restricted areas, rounding off sharp corners, and otherwise smoothing out the flow of air is streamlining, the management has for years followed this principle with gratifying results.

The operation of the Olga No. 2 Mine of the Carter Coal Company is under the supervision of G. R. Jennings, division superintendent; P. D. Turner, mine foreman; and Wm. Norris, Jr., safety inspector.



Photograph by Norfolk & Western Railway

Coalwood, W. Va., showing doctors' offices, club house, store, general offices and recreation building of Carter Coal Company

Typical
Preparation Plant
of Today

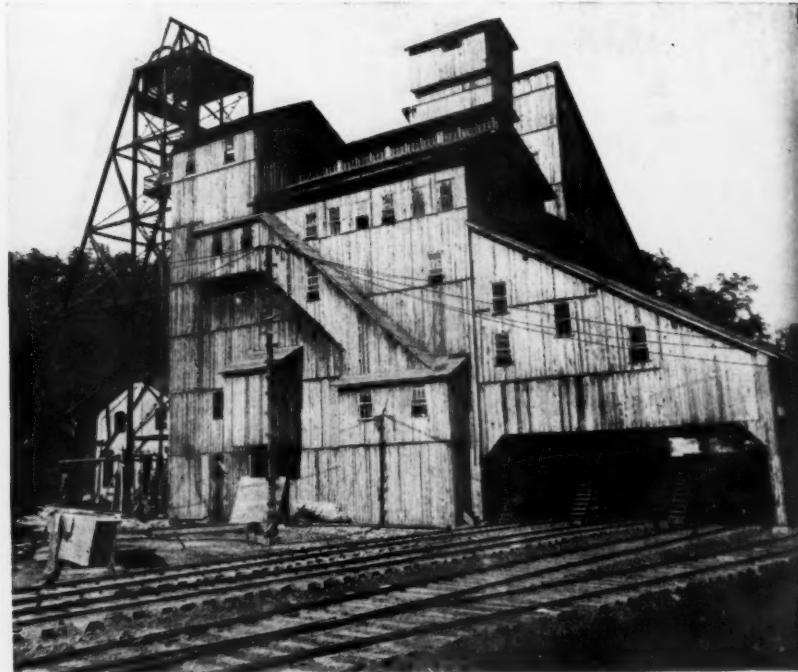


MODERN COAL PREPARATION — HOW IT STARTED A FEW SHORT YEARS AGO

Photos of early Plants Courtesy of
P. C. THOMAS, Vice President, Koppers Coal Co.



Above: Early tipple with one loading chute.
Note rope and button conveyor construction



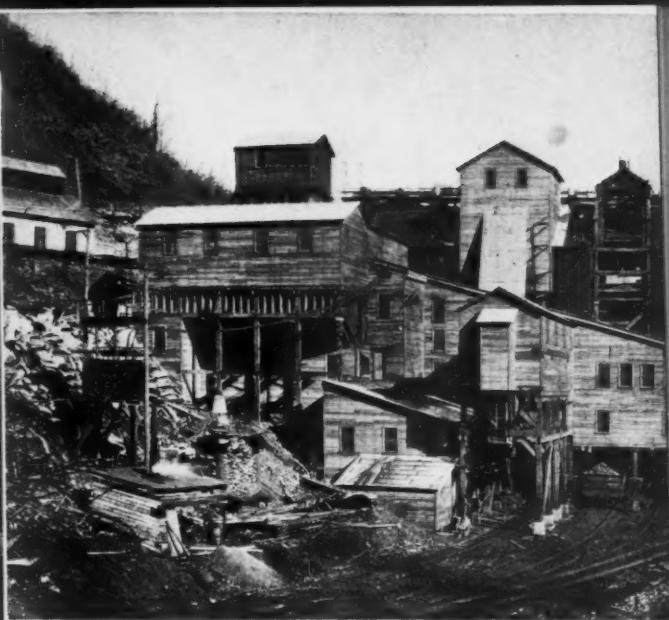
Upper right: Plant for multiple sizing, with
gravity screens, revolving screens and pick-
ing table



Lower right: Gravity screening with bins for
coke oven slack



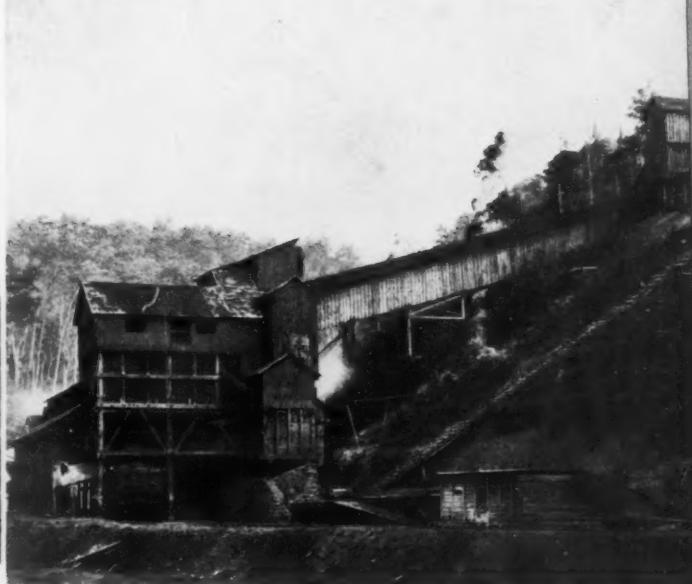
Two-track plant with gravity screening



Attempts to wash fines led to complicated plant layouts



Loading four sizes, stove loads on screenings track



Bar screens and bins solved sizing problems



Above: Three-track gravity tipple and bee-hive coke oven plant

Right: Three-track plant. Note boiler coal conveyor



Splicing and Vulcanizing Two-Conductor Concentric Cables

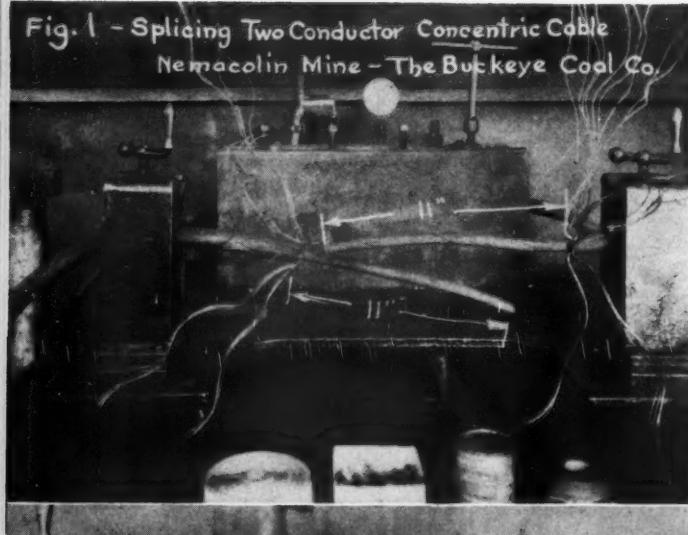


Fig. 1 - Splicing Two Conductor Concentric Cable
Nemacolin Mine - The Buckeye Coal Co.

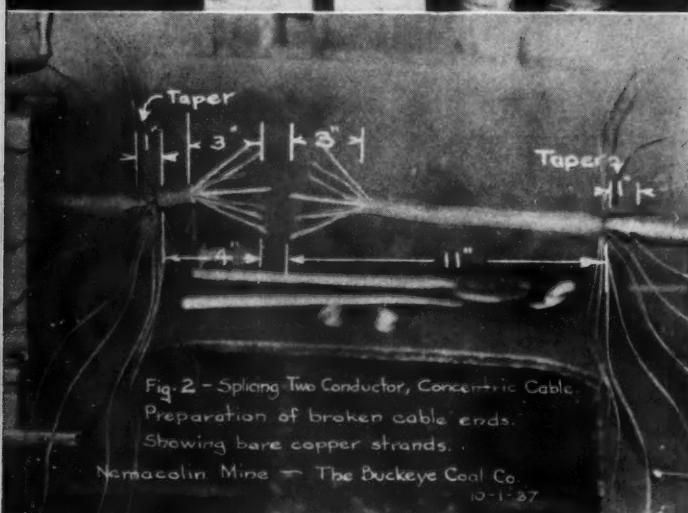


Fig. 2 - Splicing Two Conductor, Concentric Cable.
Preparation of broken cable ends.
Showing bare copper strands.
Nemacolin Mine - The Buckeye Coal Co.
10-1-37

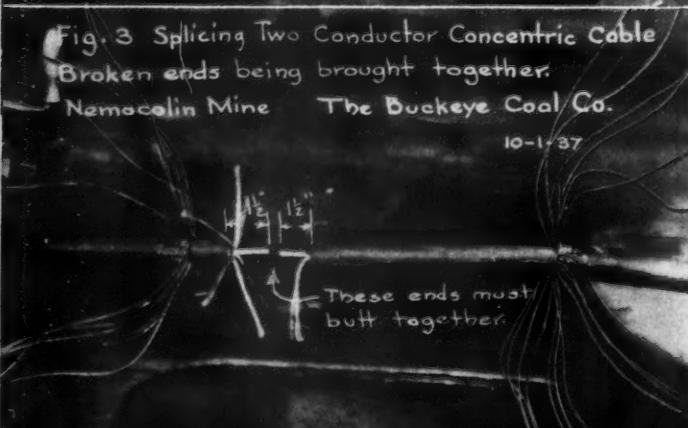


Fig. 3 Splicing Two Conductor Concentric Cable
Broken ends being brought together.
Nemacolin Mine The Buckeye Coal Co.
10-1-37

- **Experience Proves Splicing of Locomotive and Mining Machine Cables a Success at Nemacolin**

By T. E. DAVIES

Master Mechanic,
The Buckeye Coal Company

THE Nemacolin mine of The Buckeye Coal Company, subsidiary of The Youngstown Sheet and Tube Company, employs all two-conductor concentric cables on the gathering locomotives and coal cutting machines, because it is necessary to place on the reel at least 475 feet of cable in order to reach the extreme limits of working places inby the door locations where power feeder lines stop. Our experience has indicated that the use of concentric cable minimizes the amount of kinking, climbing on the reel, and power necessary to reel up the cable; and results in generally smoother operation.

The disadvantage claimed against concentric cable is the difficulty of splicing and vulcanizing in such a satisfactory manner as to remove hazards of short circuits at the splice when the cable is again put into service. Splicing and vulcanizing two conductor concentric mining machine cables have given a lot of trouble in the past, due, in my opinion, to lack of earnest study of the problem. At Nemacolin very good results have been obtained due to careful study and painstaking efforts in making and vulcanizing splices.

Permanent Splicing Done by One Man

When cables are run over and cut during the working shift, temporary splices are made by the motormen who are trained to make good secure temporary jobs, using Newberry No. 2 splicing rings on the positive wire, and pig tail splices $\frac{1}{2}$ inch long, bent back, on the negative wire. This splice is taped carefully to give safe operating results during the balance of the shift. When the locomotive is brought to the shop a specially trained workman cuts the old splice out, makes a permanent splice, and vulcanizes the outer jacket by the following procedure.

First, the outer jackets are removed 11 inches from each end of the cables to be spliced (as shown in Figure 1); the jackets are then tapered back 1 inch from the 11-inch point (see Figure 2). A sharp knife is used and dipped in water occasionally to ease the cutting of the rubber. The right hand positive conductor is allowed to

remain 11 inches long, but 7 inches are cut from the end of the left hand positive conductor, leaving only 4 inches remaining from the beginning of the taper end (see Figure 2). Three inches of the insulation are then removed from the ends of the positive conductors (as shown in Figure 2), and the center strands are cut off $1\frac{1}{2}$ inches to permit them to butt together in the center of the 3-inch lap of the positive conductors, as shown in Figure 3.

It is necessary to bring these center strands together to avoid loss of carrying capacity after the cable is again put in service. The ends are then brought down, overlapping each other, and two Newberry splice rings are put on, $\frac{1}{2}$ inch apart, to allow flexibility between rings (see Figure 4). The sharp edges of the splice rings are filed down to prevent cutting through the tape. Four layers of friction tape are then applied to bring the positive insulation up level or slightly above the original insulation, and four layers of rubber tape are placed over these, bringing the tape and rubber up to the height shown in Figure 5.

No Solder Used

Next, the negative wires are brought down spirally around the positive cable and spliced at the right hand side of the positive splice as shown in Figure 6. Wires are spliced in pairs, twisted together in pig tail fashion and cut off to about $\frac{3}{4}$ -inch length, then bent down tightly against the cable to keep the ends from puncturing the outer jacket (see Figure 6). No solder is used in the entire job, as this adds too much rigidity to the splice. Flexibility of the splice is very necessary to permit sharp bends around ribs and various other places, when the cable is again put into service.

Friction Tape Below Rubber Covering

The cable is now ready for four layers of friction tape and four layers of rubber outer covering, and the splice is then ready for the vulcanizing machine to complete the job, as shown in Figure 7.

Figure 1 shows the complete vulcanizing unit in operation with one cable being vulcanized and one cable being prepared for vulcanization. The table and vises were built from scrap material by our machine shop. Thirty-five minutes are required by the vulcanizer to mold a splice, as shown in Figure 7, at 50 to 65-lb. steam pressure, and one workman can make from eight to ten splices in a 7-hour shift.

All rubber and mold dressings are purchased from the Mines Equipment Company. Only two splices made by this process have failed in the past three years, which we consider a very small percentage of the total splices made.

The vulcanizing is done with a Mines Equipment Company No. 1 vulcanizing machine, and full instructions for the proper and safe operation are furnished by the manufacturer. The machine is equipped with aluminum molds 18 inches long, having a 1-inch hole to take cables of maximum outside diameter of .95 inch; a pressure gauge, reading 0 to 200 lb.; a relief valve to operate at 75 lb. pressure; and a temperature relay to control the heat.

In conclusion, we may say that our splicing troubles have been reduced to a minimum, and considerable savings have been enjoyed from carefully made connections; also, fewer short circuits occurring from repaired cables have probably saved much time in delays of locomotives, cutting of coal, as well as cost of materials formerly destroyed.

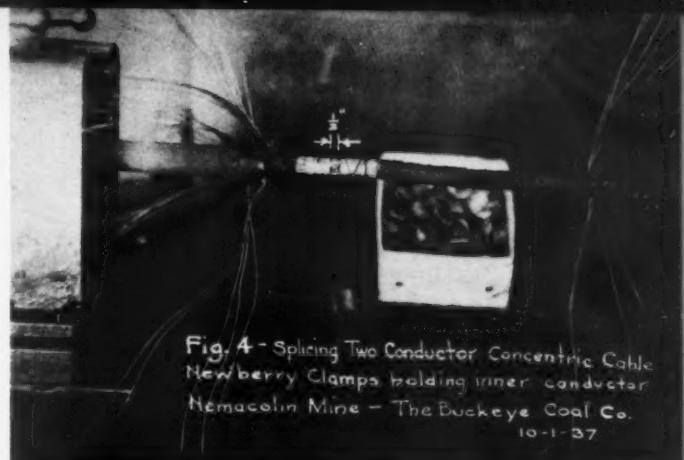


Fig. 4 - Splicing Two Conductor Concentric Cable
Newberry Clamps holding inner conductor
Nemacolin Mine - The Buckeye Coal Co.
10-1-37



Fig. 5 - Splicing Two Conductor Concentric Cable
After clamping inner conductor, it is taped with
Friction and Vulcanizing Tape.
Nemacolin Mine - The Buckeye Coal Co.

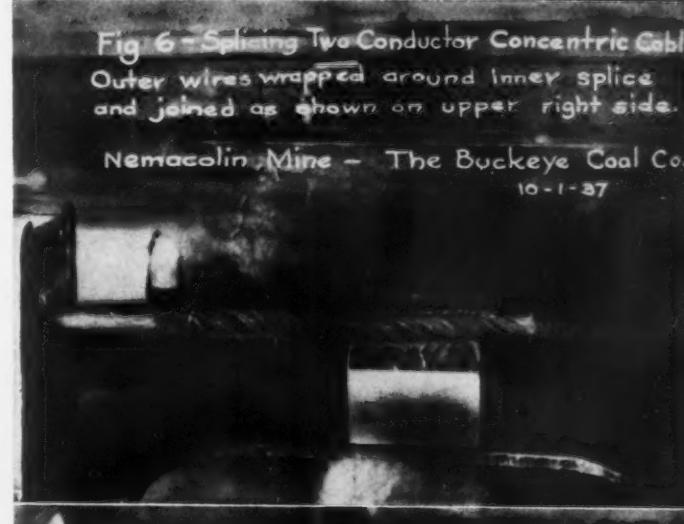


Fig. 6 - Splicing Two Conductor Concentric Cable
Outer wires wrapped around inner splice
and joined as shown on upper right side.

Nemacolin Mine - The Buckeye Coal Co.

10-1-37



Fig. 7 - Splicing Two Conductor-Concentric Cable.
Splice is covered with rubber, molded in the
vulcanizer.

Nemacolin Mine - The Buckeye Coal Co.

10-1-37

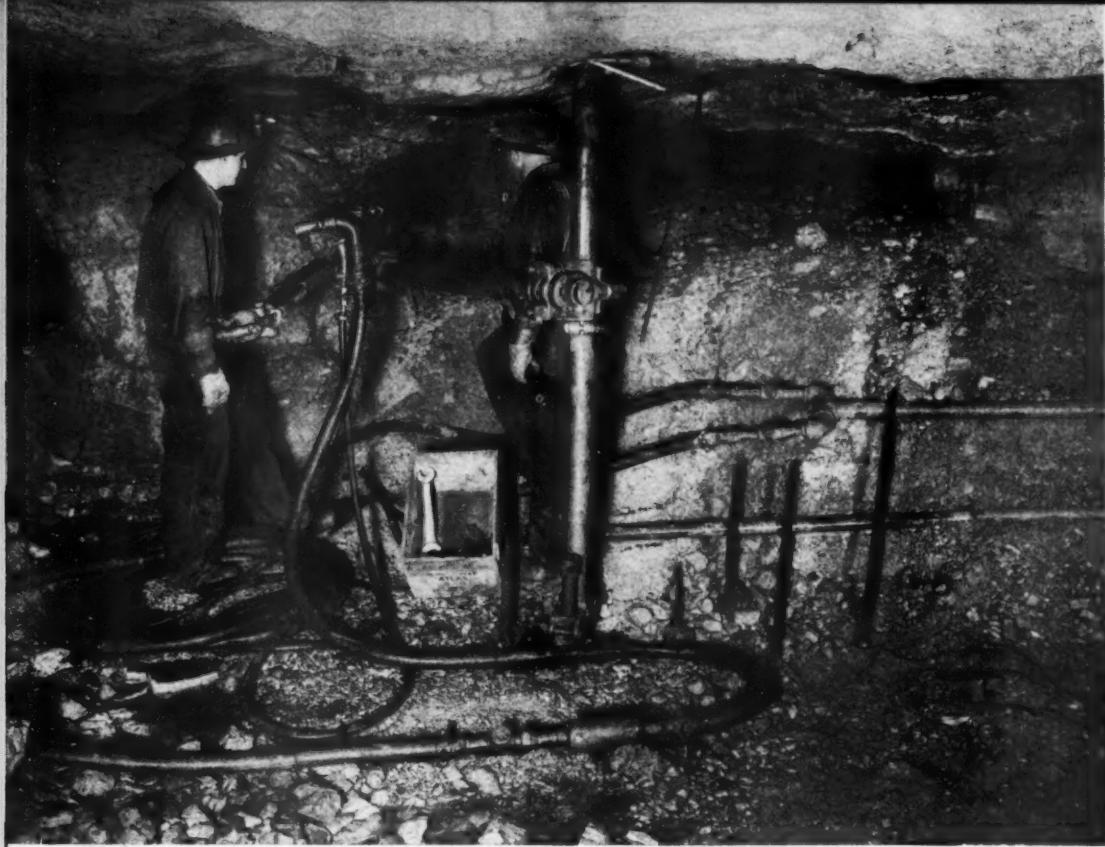


Fig. 7. Automatic-feed drifter in action. Hydraulic columns have replaced the double screw jacks shown above

Mechanized Mining in the Tri-State District

• Scraper and Conveyor System Installed by Eagle-Picher in Mining Sheet Ground Prove Successful

THE Oronogo-Webb City district in the southwest corner of Missouri, lying at the northeast end of the so-called Tri-State zinc and lead district, had been mined for some 40 years prior to 1920, but has been dormant since that time. The development of the richer ores of the Picher, Okla., district together with the low metal prices of the post-war period made mining in this Missouri area unattractive and unprofitable.

Most of the ore bodies in this district were in the sheet-ground horizon which lies about 150 ft. below the surface. These ore bodies are usually of considerable extent laterally, but

By C. W. NICOLSON

General Superintendent
Eagle-Picher Mining & Smelting Co.
Picher, Okla.

have a vertical thickness of only six or seven feet. The commercial minerals, sphalerite and galena, occur in horizontal bands or as the filling of vugs in a flint gangue. The mineralization is rather erratic and although some rich spots are found, the ore as a whole has a recoverable content of about 4½ percent in terms of the sulphides. With labor and the costs of supplies at their present levels, ore

of this tenor is not commercial if mined by the methods formerly in vogue in the district.

As it was known that considerable reserves of ore of this character still existed in this district, it was decided to open and equip an experimental mine to determine whether or not complete mechanization of mining operations would produce a cost sufficiently low to make profitable mining of these ore bodies possible.

Old Mine Reopened for Experiment

The mine chosen for the experiment was the D. C. & E. mine near Oronogo, Mo. This operation had been opened in the early days of the camp and some mining had been done on the room-and-pillar system, the broken ore being shoveled into cans and hauled to the shaft by mules, where the cans were hoisted to the surface in the customary Tri-State manner. The shaft for this mine was in good condition, but was small, being only 5 ft. x 5 ft. in cross section.

It was decided that a production of 600 tons per shift would be sufficient for the purpose of the experiment. As the company had a steel head frame with two 2-ton skips in

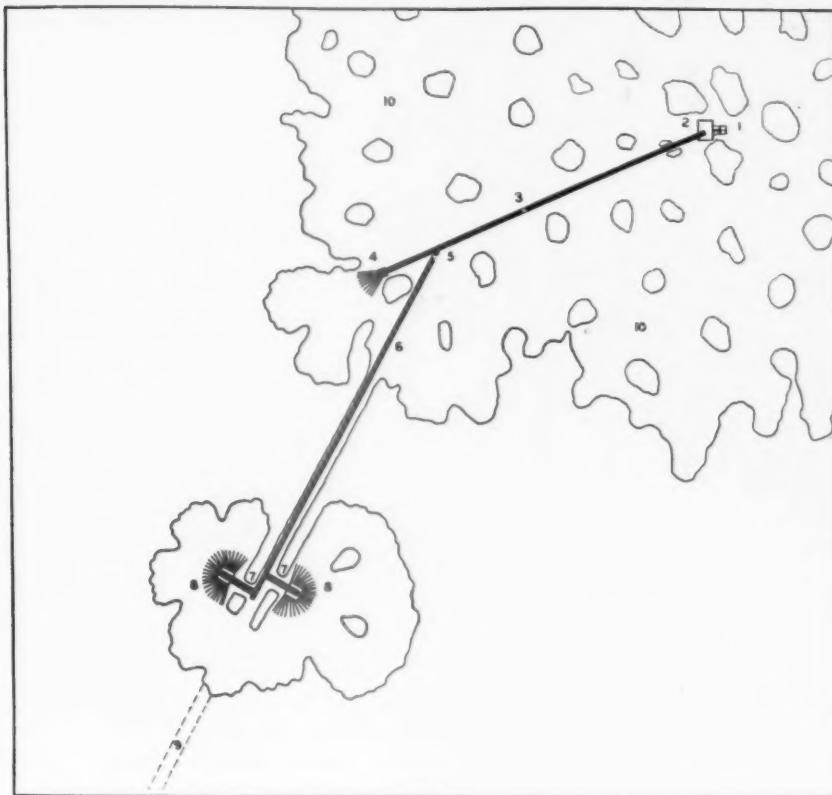


Fig. 1. Map of mine workings, showing conveyor system and location of scrapers

balance at an idle mine in Picher, this equipment was moved to the experimental mine, the shaft being stripped to 5 ft. x 7 ft. to accommodate these skips. As the ground had originally been mined at the shaft to a height of about 20 ft., a small wooden storage hopper with a capacity of about 50 tons was built underground at the shaft, from which the skips could be loaded.

Transportation by Conveyor Belts

After consideration of the various methods of transportation underground, it was decided to install conveyor belts for this purpose. Since the broken ore would be delivered directly to these belts by scrapers, it was realized that the duty of handling broken flint in coarse sizes would be severe and the belts were therefore ordered to the following specifications: 24-in. width, 6 ply, 42 oz. duck, skim coat between the plies, 3/16-in. top cover, 1/16-in. pulley cover with breaker strip in the top cover. The belt being stiff, it was necessary to install 36-in. head pulleys and 30-in. tail pulleys. Three-pulley troughing idlers were used, the pulleys being 4 in. in diameter with sealed bearings,

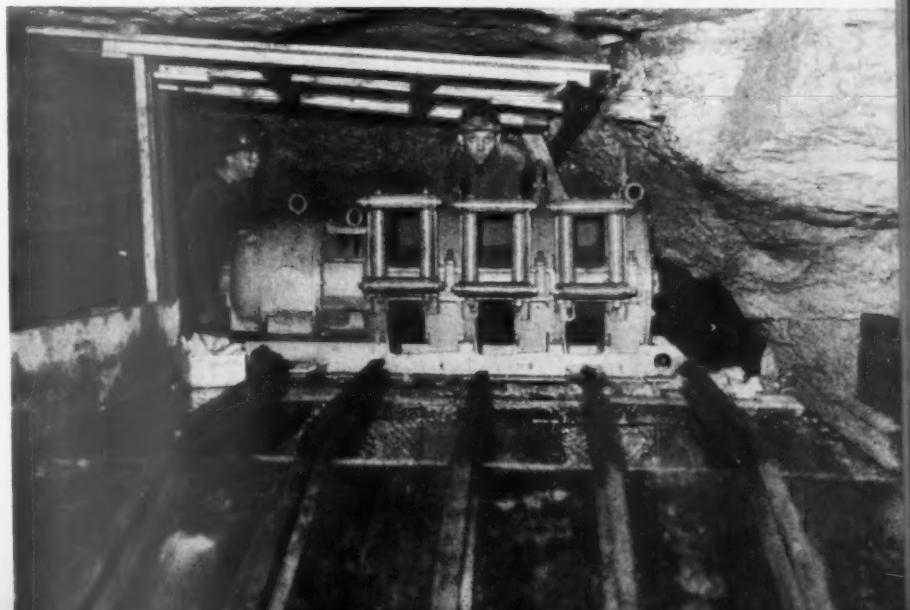
and were placed on 4-ft. centers with the return idlers on 16-ft. centers.

Mining Method Outlined

On the map in Fig. 1 the old mine workings and pillars are shown in the northeast corner, the shaft being numbered 1 and the storage pocket 2. Number 3 is the first belt conveyor, approximately 400 ft. in length, from

the end of which by means of a scraper at 4, it was planned to attack the west wall of the old workings. There being insufficient faces in the old mine from which to obtain the desired daily tonnage, a drift 8 ft. x 8 ft. in section was driven to the southwest a distance of 300 ft., in which the second conveyor, number 6, was installed.

Fig. 2. Electrical hoist for scraper operation, showing hopper through which scraper dumps to conveyor



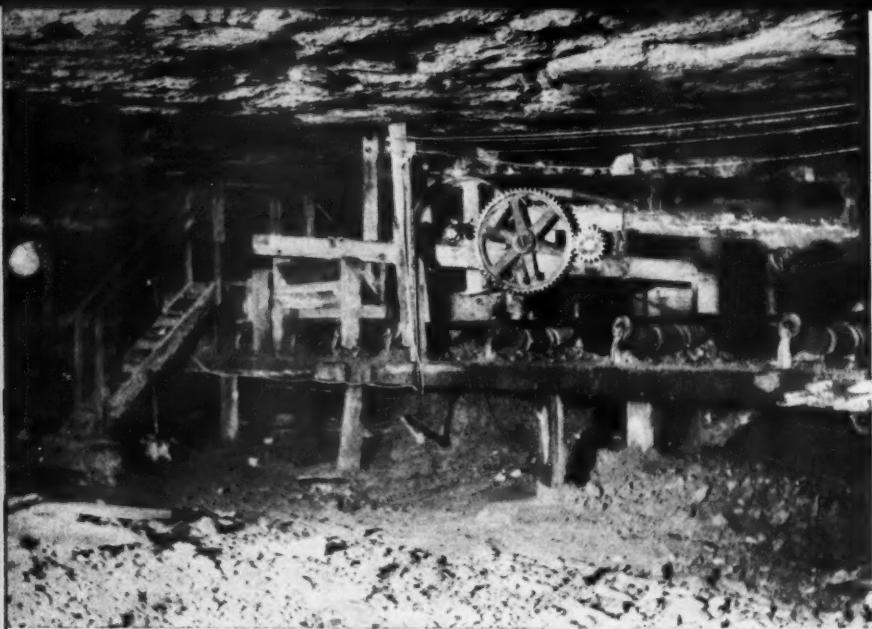


Fig. 3. Junction point of conveyors, with gear guards removed

the main belts. No feeders are used on the ends of these cross belts, the ore being drawn directly on the belts from the small chutes above.

Grizzlies above the belts are spaced with 9-in. openings, it being intended that all oversize material would be broken by the scraper operator. It sometimes happens, however, that slabs as much as 24-in. in length pass through the grizzly, and these slabs have been handled successfully on the belts.

Fig. 3 shows the junction point of the conveyors (5) with the gear guards removed. This is located in the old workings where the roof was about 9 ft. above the floor. Fig. 4

From the end of this drift rooms were opened on both sides in which scrapers were installed at points numbered 8. From these points radial drifts, each about 30 ft. wide, were started, leaving pillars between these radial drifts wherever necessary. Since it was decided that the economical limit of scraping would be about 150 ft., each of these scrapers at 8 will handle all the ore in a semi-circle 150 ft. in radius, leaving walls on each side of the main haulage drift about 10 ft. in thickness to protect the belts.

While mining was in progress in these rooms the main haulage drift was being extended (9) another 300 ft. so that new rooms could be opened by the time mining at points 8 was completed.

Head-room Limited

The limited head-room in this mine was a controlling factor in the design and installation of much of the equipment. The natural roof of the ore is strong and will stand well over considerable distances, but if this roof is broken for additional head-room at any point, slackening will produce a hazardous condition. At the end of the first belt (4) a reciprocating feeder of our own design was installed, which lies beneath the chute shown in Fig. 2.

Scrapers at points 8 feed to short cross-conveyors (7) which in turn feed the main belt. The belts on the cross-conveyor are 30-in. in width and are of lighter construction than the main belt, so that 18-in. pulleys can be used. These cross-conveyors move at a speed of 30 ft. per minute as compared with 200 ft. per minute for

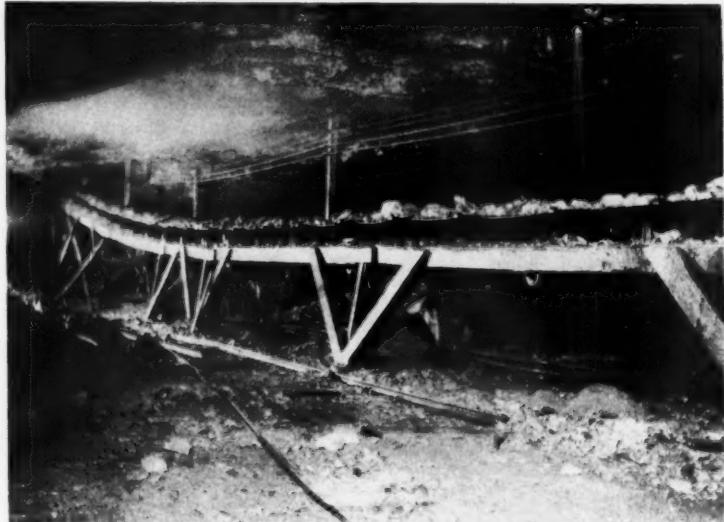


Fig. 4. Looking toward shaft pocket along first conveyor

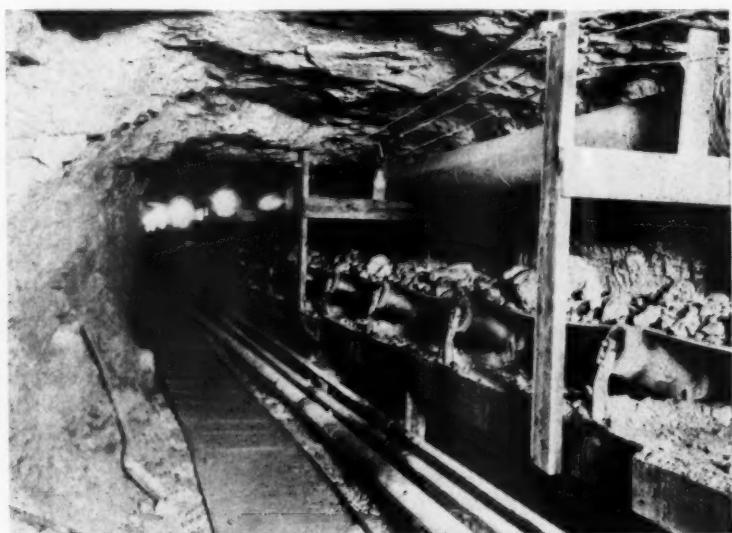


Fig. 5. View of second conveyor, looking toward tail pulley

shows the first conveyor at point 3, looking toward the shaft pocket. Fig. 5 shows the second conveyor at point 6 looking toward the tail pulley. A good impression of the coarseness of the ore handled can be obtained from these pictures. Fig. 6 shows a scraper in action.

As shown in Figs. 2 and 6, 3-drum scraper hoists are used, driven by 25 h. p. motors. The scrapers are 48-in. in width and handle about 1,500 lbs. of ore on each trip. The broken flint being extremely abrasive, cast steel scrapers are used with chrome-molybdenum shoes 10-in. in width. These shoes have a life of about 11,000 tons and the experience so far has indicated that it is cheaper to wear out the shoes and discard them rather than attempt to build them up with hard surfacing materials. The pull-in cables are $\frac{5}{8}$ -in. in diameter and the pull-back cables $\frac{1}{2}$ -in. Three scraper hoists are in use, although the total daily tonnage could easily be handled by two scrapers. In a test run one scraper dragging a distance of 100 ft. delivered 162 tons to the belt in two hours.

Detachable Bits Used

All drilling is done with $3\frac{1}{2}$ -in. drifters with automatic feeds equipped with long guide shells permitting steel changes of 36-in. All drilling is done from columns and arms, the columns being held in place by hydraulic pressure. Each drifter ordinarily drills ten 10-ft. holes each shift. Fig. 7 shows one of the automatic-feed drifters in action, although in this case the column has double screw jacks, which were later discarded in favor of the hydraulic columns.

All drilling is done with detachable bits. The rock is so abrasive that with forged bits each bit is gauged after running 2 ft. and it is necessary to use bits with a $\frac{1}{4}$ -in. drop in gauge for each 2 ft. in length of steel. The standard type of detachable bit is no better than the forged bit, since a

TABLE I
COMPARATIVE COSTS OF DRILLING WITH FORGED AND WITH DETACHABLE BITS

	<i>Forged Bits</i>	<i>Detachable Bits</i>	
	Per bit dulled	Per foot drilled	Per foot drilled
Sharpening:			
Labor	\$0.07027		
Supplies	.01035		
Fuel	.00752		
Compressed air	.01622		
Total	\$0.10436	\$0.0522	
New bits			\$0.0224
Re-treatment			.0021
Rods			.0026
Steel loss	\$0.03000	\$0.0150	.0081
Transportation and nipping	.01600	.0080	.0026
Interest on steel inventory	.01720	.0086	.0008
Maintenance of shop	.00195	.0009	.0007
Total	\$0.16351	\$0.0847	\$0.0393

TABLE II
OPERATING COSTS PER TON AT THE D. C. & E. MINE, OROLOGO, Mo.

Breaking:			
Drill labor			\$0.140
Drill repairs and supplies			.010
Compressed air			.030
Casualty insurance			.006
Drill steel and bits			.054
Explosives			.180
Miscellaneous repairs and supplies			.020
Supervision			.015
Total			\$0.455
Scraping:			
Labor			.050
Repairs and supplies			.030
Power			.012
Casualty insurance			.003
Total			.095
Conveying:			
Labor			.010
Repairs and supplies			.010
Power			.002
Casualty insurance			
Total			.022
Hoisting:			
Labor			.020
Repairs and supplies			.010
Power			.080
Casualty insurance			.001
Total			.061
Total			\$0.633

$2\frac{1}{2}$ -in. bit will be gauged so much in running 2 ft. that only one regrind is possible. A new bit was therefore designed for use in this district, having four independent wings, which permit the large flakes of rock to be passed out without being ground to powder. Since this flint flakes off under the impact, it is not necessary to have a sharp edge on

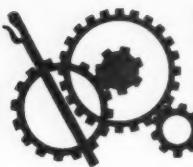
the bit in order to cut the rock. Each bit is therefore transferred to successive rods and is used until the wings have been ground down to the skirt diameter. The average life of a detachable bit is 14 ft. while for a forged bit it is 2 ft. Table I shows comparative costs of drilling with forged and detachable bits.

Operating Costs Halved

As this mine is an experimental one, the operations have been intermittent, but they have been sufficient to indicate the above costs per ton for steady operation. As a comparison, the average cost for these same items for the Tri-State district as a whole is \$1.23 and the tons per man shift 7.65 as compared to 18.0 tons for the experimental mine.

Fig. 6. Scraper in action in one of the rooms. Note coarseness of ore





MECHANIZATION Trends

REPORTS OF THE COAL DIVISION

Power Cables Inside Bituminous Coal Mines

WITH the changing conditions in coal mining methods, particularly the more general use of mechanical loading, operating officials are confronted more seriously than ever with the problem of maintaining good DC voltage regulation at the working faces.

In general, mechanical loading results in the concentration of a heavy power load in a reduced area of the mine. Then, too, with this concentration of mining activity, the advancement becomes more rapid. With the converting equipment, or substation, located at a fixed point, and the load center rapidly advancing, it may soon become impractical to install sufficient DC conductors to insure satisfactory voltage regulation. The logical solution of this problem is to advance the converting equipment each time the economical transmission distance has been exceeded.

This not only calls for converting equipment which can be relocated with a minimum of time and expense, but each time the location is changed some means must be found for supplying high voltage AC power to the new location. To best meet this condition, it is necessary to provide a power transmission system which is flexible and can be extended or relocated to best advantage and with a minimum of time and expense. This requirement is many times best met by the use of a high voltage power cable located in the mine entries.

Such a system is not only desirable in meeting the foregoing conditions, but it offers certain additional advantages as compared with an overhead transmission line. Some of these advantages are freedom from damage due to wind, ice, or electrical storms, no right of way to buy or lines to maintain, and elimination of many, if not all, bore holes.

Operating Conditions

In considering recommendations for the use of high voltage power cable in coal mines, it is best first to consider some of the hazards and conditions under which such cable will operate.

To be safe, we should consider that every coal mine is alternately or continuously wet and dry; also that there is considerable corrosive effect from the chemicals in most the mine water which has a destructive effect on certain materials. There is generally, also, electrolysis present which has a further detrimental action on certain metals. The cable may also be subjected to severe mechanical abuse unless adequately protected against it. Inasmuch as cables may be subjected to necessary or accidental overloads, it is necessary to provide a construction which will be capable, in so far as possible, of meeting high temperature conditions resulting from these overloads.

Armored Cables

For many years, it has been customary practice to install varnished cambric or rubber insulated cables finished with a lead sheath steel armor with jute and asphalt cover. This type of construction has proved to be satisfactory from most standpoints, particularly it provided some additional protection against mechanical injury when not adequately protected otherwise, although the protection afforded by the steel armor is to be considered by no means adequate to withstand injuries which may result from heavy roof falls, runaway trips, or other severe injury. Because of this danger from mechanical injury regardless of the construction used, it should not be considered that any cable is safe unless it is given additional protection.

If varnished cambric is used for the insulation it is very necessary to pro-

vide a lead sheath because varnished cambric cannot withstand continuous immersion in water. It is true that varnished cambric cannot be recommended for burial in ground, but it does shed water very well, as evidenced by the extremely good service record of non-leaded varnished cambric insulated aerial cable for voltages up to 13,200 volts when installed aerially, where, of course, it is subject to severe rains. In some cases, single conductor varnished cambric insulated cable with braid finish is used successfully for bore hole installations. The rubber compounds of some years ago were little better. While metallic armored cable has some advantages, it also has some certain disadvantages. Regardless of whether it is insulated with varnished cambric or rubber, it is comparatively rigid and difficult to handle, particularly if it becomes necessary to remove it from its original installation and relocate it. Inasmuch as many coal operating companies do not have men who are trained in splicing lead sheath cable, there is an additional hazard of making a lead splice which is not absolutely water tight. Even though the joint may not actually be in water there is a breathing action on the cable due to change in load and temperature which allows the humid mine atmosphere to be drawn through an opening in the lead sheath, thus forming condensation and ultimately an accumulation of water which might cause failure.

Where the lead sheath steel band armor construction is used, these metals can be attacked by chemicals in the mine water and/or electrolysis. The best that can be done is to protect these metals so as to retard any such action, but at the best a retarding action is all that can be hoped for in severe cases. Therefore, under these conditions, the life of the cable may be a question of time.



New Type Cables Available

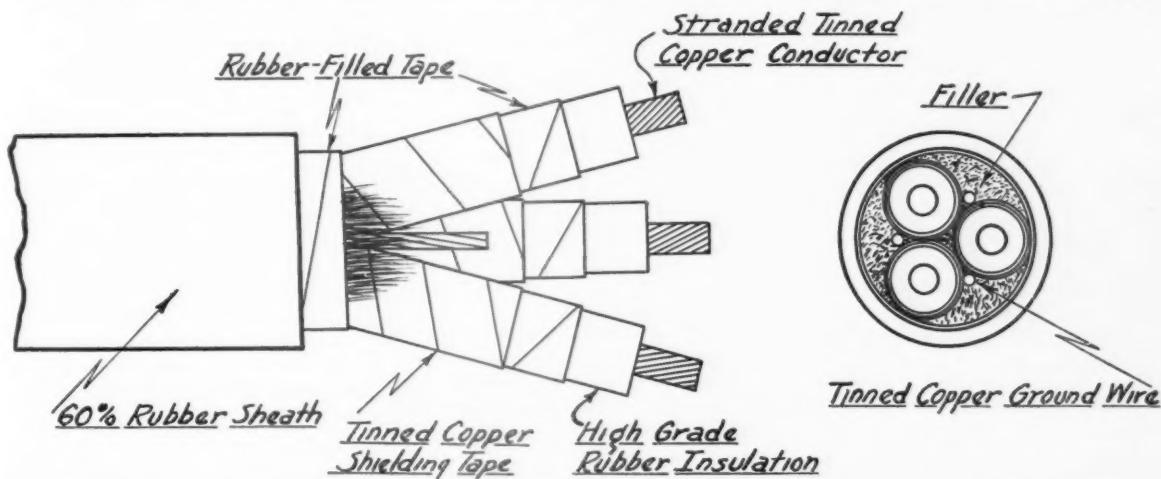
Later developments in the manufacture of insulating rubber compounds have made available materials which can be used without the necessity of adding either lead sheath or steel armor. A number of installations using these new rubber compounds have now been in service several years. Inasmuch as these compounds are not affected by chemicals in the mine water or by electrolysis, there is no reason to believe they will not at least under severe conditions, perhaps outlast the usual metal armored construction. This type of cable is very easy to splice and good splices can be made by any careful workman. There is no breathing action such as will occur on lead sheath cable, and, due to the fact that no rigid metals are used in the finish, this

should be grounded at the ends of the cable, and at the splices, also provides a definite ground potential between the conductor and the exterior of the cable. If it is deemed advisable to provide a shielding of a greater current carrying capacity a heavier shielding tape should be used. Additional protection can also be added by inserting a ground wire in the cable interstices. This ground wire and shielding tape combined usually have slightly less cross section than one of the line conductors. While there is considerable additional protection afforded by these ground wires where the cable is connected to a grounded neutral system, yet there would be some question as to how much protection would be added where the cable is operating on an ungrounded system.

This type of cable should be finished

rounded with a metal sheath or tape which is properly grounded, then there remains a slight, if any, advantage in safety of one type as compared to the other.

Under certain fault conditions, on a purely non-metallic armor construction, there would be danger of establishing a high potential between the fault and ground or other metallic paths such as rails or pipe line. With an appreciable amount of current flowing from the fault, it can be seen that a person could easily get across a dangerously high potential difference. With the lead and steel armor construction on the non-metallic type with proper shielding tape or ground wires, the fault current should naturally flow back through these lower resistance paths. Thus, no dangerously high potential could be set up.



construction is very flexible and easy to handle.

In selecting the insulating and finishing materials of this cable, the insulating rubber should be capable of withstanding a copper temperature of 75° C. It should have a moisture absorption not exceeding .010 grams per sq. in. and should be capable of withstanding 504 hr. aging in the oxygen at 300 lb. ox. pressure per sq. inch. These specifications to be in accordance with standard A. S. T. M. procedure outlined in Spec. D-27 (latest revision) in so far as they apply.

Over each insulated conductor there should be wound a copper shielding tape at least five mills thick. One purpose of this copper tape is to provide a shield to protect the rubber insulation from any possible corona action. This is important at 2300 volts and above. The copper shielding tape which

with a rubber sheath jacket having low moisture absorption, long life, and high tensile strength. The tensile strength should be at least 3500 lb. per square inch, which would compare favorably with the mechanical properties of the jacket sheath used on portable trailing cables. Using a material of this high tensile strength insures the cable against damage while handling and having rubber compound with good aging qualities will permit the cable to be relocated after years of operation without any possibility of damage.

Safety Features

From a safety standpoint some are inclined to give advantage to the metallic armored construction. However, when it is recognized that no cable, regardless of construction, is safe unless given adequate protection against mechanical injury and again that none are safe unless the conductors are sur-

Method of Installation

There are a number of methods of installing cables which will provide adequate protection against mechanical injury. One of the most commonly used, and perhaps the most satisfactory in general, is to bury the cable in a trench of suitable depth located in the bottom and as close to the rib as possible. After laying the cable in the trench, sand or other non-combustible material should be filled in sufficient to cover the cable a few inches. After placing this material in the trench the cable should be raised slightly so as to allow the material to flow underneath the cable. At crossings or other places where men are apt to be digging with picks or sharp bars, the cable should be covered with suitable wood or metal shields.

Submitted, December 1937, by
C. E. WISSINGER,
Committee of Southwestern
Pennsylvania.



Specifications for Main Haulage Mine Ties

General Quality—Except as herein-after provided, all mine ties shall be free from any defects that may impair their strength or durability such as decay, large splits, large shakes, large or numerous holes or knots, grain with slant greater than one in 15. They shall be straight, well hewed or sawed, cut square at the ends, have bottom and top parallel, and have bark entirely removed.

Dimensions—All mine ties must not measure more than $\frac{1}{4}$ in. less than the specified dimensions throughout both sections between 6 in. and 18 in. from each end of the tie, but may have not more than 1 in. wane outside of those sections. Ties over 1 in. longer, shorter, or wider, or $\frac{1}{2}$ in. thicker than the size ordered will be rejected.

Knots—A large knot is one whose average diameter exceeds one-third the width of the surface on which it appears; but such a knot may be allowed if it occurs outside the sections of the tie between 6 in. and 18 in. from each end. Numerous knots are any number equaling a large knot in damaging effect.

Shake—One which does not extend nearer than $\frac{1}{2}$ in. to any surface will be allowed.

Split—One which is not more than 5 in. long will be allowed provided satisfactory anti-splitting devices have been properly applied.

Note—Mines will designate or determine first the sizes and lengths required and which of the following kinds of wood suitable for mine ties will be used:

Ashes	Hickories
Beech	Larches
Birches	Locusts
Catalpas	Maples
Cedars	Mulberries
Cherries	Oaks
Chestnut	Pines
Cypresses	Poplars
Douglas fir	Redwoods
Elms	Sassafras
Firs (true)	Spruces
Gums	Sycamores
Hackberries	Walnuts
Hemlocks	

Resistance to Decay

Untreated Ties—The average woods run timber available for main haulage mine ties is not naturally resistant to decay. Decay conditions vary in different mines and in the same mine. The average life of untreated mine ties varies generally from two to five years. The average life of mine ties in any mine can only be determined by actual study.

Pressure Treated Ties—The average woods run timber available for main haulage mine ties becomes decay resistant when properly seasoned and treated with adequate amounts of creosote oil or approved toxic salts using A. W. P. A. standard methods of treatment.

Economics of Main Haulage Mine Tie Use

Life Pressure Treated Ties—Inside Tracks—The average life of pressure treated main haulage ties is yet to be determined. Careful check inspections of treated ties which had been in mine tracks inside the mines for periods of from 7 to 17 years showed the treated ties in good condition without evidence of decay.

Life Pressure Treated Ties—Outside Tracks—Tie service conditions in outside main haulage mine tracks are identical with those of the railroads in respect to the decay resistance of untreated and treated ties. The tie service records of the American railroads show an average life under heavy traffic conditions of from 20 to 30 years for pressure creosoted cross ties. The average life of ties treated under pressure with $\frac{1}{2}$ lb. zinc chloride per cu. ft. is approximately 12 to 15 years.

Labor Costs Main Haulage Mine Tie Renewals

Mine tie renewals in main haulage tracks are usually made on a "spot" basis—that is, individual ties are renewed separately. Under the existing wage contracts and with time and a half for overtime, the actual cost of "spot" tie renewals is an item worth real study. Under varying conditions in many mines the average "spot" tie renewals in main haulage tracks

studied varied from 12 ties to 25 ties for two men in one seven-hour shift.

When Treated Ties Should Be Used

When the expected life of a main haulage track is longer than the average life of the available untreated ties, it is economical to use pressure treated ties. When the actual life of a main haulage track is completed the pressure treated ties should be removed from the old track, the spike holes plugged and the ties assembled for reuse in a new location. The additional cost of a treated tie usually will be more than offset by the saving of the cost of the first renewal of an untreated tie. Elimination of subsequent untreated tie renewals will continue to produce savings throughout the life of the track.

Tie Pressure Treatment Specifications

Processes—The standard specifications for the preservative treatment of ties by pressure processes as adopted by the A. W. P. A. shall govern the treatment of main haulage mine ties.

Preservatives—Net retentions of preservatives after treatment shall be:

- a. Creosote:
A. W. P. A. Grade 1. Not less than 6 lb. per cu. ft. of ties. Empty Cell Process.
A. W. P. A. 80-20 Creosote Coal-Tar Solution. Not less than 6 lb. per cu. ft. of ties. Empty Cell Process.
- b. Zinc Chloride:
A. W. P. A. specifications. Not less than $\frac{1}{2}$ lb. dry salt per cu. ft. of ties. Full Cell Process.
- c. Chromated Zinc Chloride:
Not less than $\frac{3}{4}$ lb. dry salt per cu. ft. of ties. Full Cell Process.
- d. Wolman Salts:
Not less than $\frac{3}{10}$ lb. dry salt per cu. ft. of ties. Full Cell Process.

Method of Spiking

All ties on tangent track should be spiked with the inside spikes opposite each other and the outside spikes ahead in the direction of traffic or on a single track line, the outside spikes ahead in the direction of the loaded trips.



Size of Main Haulage Ties				
Cross Section	Usual Weight Rail Pounds	Size Spike Inches	Tie Spacing—30 ft. Rail Intermediate Inches	Joint Inches
4 x 6	60—75	½ x 3½	21½	16
5 x 7	60—80	½ x 4½	22½	22½
6 x 8	85—100	9/16 x 5½	24	24

Note 1. Main haulage tracks laid on 4 x 6 ties are generally reinforced with welded cross rails or steel ties in addition to the usual number of wood ties, where the traffic density justifies such construction.

Note 2. Main haulage tracks laid on 5 x 7 ties are giving adequate results without any special reinforcements, under practically all conditions of service.

Note 3. Main haulage tracks laid on 6 x 8 ties are specified with heavy rail where due to heavy grades, curves, weight of equipment and traffic density, such construction is warranted.

Tie Spacing

The tie spacing shown for the various cross sections effects practically a uniform load at any distance below the surface, therefore, increased stabilization in cases of poor sub-grade can only be accomplished when the tie lengths are increased as this distributes the load over a wider area.

Under no conditions should mine ties have spacing of less than 10 in. between the ties because a smaller space than this will not permit sufficient room for adequate tamping.

Length of Tie

Track Gauge Length of Tie

36"—39"	5'—6"
40"—44"	6'—0"
45"—48"	6'—6"

Note: Track gauge and alignment are best maintained when tracks are kept in good surface. For track gauges from 30 in. to 48 in. tie length approximately 2 ft. 6 in. over track gauge permits adequate tamping under each rail. This applies particularly to underground tracks. Surface tracks being subject to rain, freezing and thawing may require ties 3 ft. over track gauge in order to maintain surface economically.

For 56½-in. gauge track the minimum length tie to use is 8 ft. For outside tracks consideration should be given to ties 8½ ft. long where the nature of the roadbed warrants.

Tie Plates

Tie plates are not necessary on pressure treated oak mine ties—when the standards of track construction and maintenance are adequate for the operating conditions.

This conclusion may be reversed by an adverse combination of some of the following factors:

Drainage	Spacing of ties
Roadbed	Weight of rail
Ballast	Weight of loads
Grades	Speed of trips
Curves	Density of traffic
Size of ties	

Pressure treated shortleaf pine mine ties need tie plates to prevent mechanical destruction. Other species of wood vary according to their strength properties.

Tie Plugs

Creosoted tie plugs should be used to plug the spike holes in pressure treated mine ties when they are taken up from track that is no longer needed before reuse in a new location.

Maintenance

An adequate program of main haulage track inspection and maintenance is just as important as the selection of proper materials and construction methods. There is no substitute for maintenance.

Submitted November 16, 1937.

A. R. JOYCE,
Chairman
W. W. DARTNELL,
C. C. HAGENBUCH,
E. H. JENKS,
J. M. JOHNSTON.

Approved and accepted by the Committee on Coal Mine Haulage Roads, December 2, 1937.

R. V. CLAY,
Chairman,
Committee on Coal
Mine Haulage Roads.

+ + +

Meeting of the Mechanical Loading Committee of the Coal Division.

+ + +

THE Committee on Mechanical Loading of the newly organized Coal Division of the American Mining Congress held a meeting at the William Penn Hotel, Pittsburgh, on Monday, December 20. Mr. Newell G. Alford, consulting engineer of Pittsburgh of the firm of Eavenson, Alford & Auchmuty, who has recently accepted the chairmanship of this committee, presided at the meeting. Mr. Alford has had a wide experience in coal mining and the committee members, comprising representatives of coal mining companies and equipment manufacturers from all of the principal fields, are recognized as leaders in the development of mechanized mining. The following attended the meeting on Monday:

Newell G. Alford, Eavenson, Alford & Auchmuty; L. E. Young, Pittsburgh Coal Company; F. S. Follansbee, Koppers Coal Company; S. M. Cassidy, Weirton Coal Company; Edwin Johnson, Jeffrey Manufacturing Company; A. S. Knoizen, Joy Manufacturing Company; L. F. Crawford, Goodman Manufacturing Company; G. B. Southward, American Mining Congress.

The purpose of this committee is to study methods used with mechanical loading under various seam and mining conditions, with a view to determining the best practices that are being used. At the meeting on Monday, it was decided that the first project to be undertaken by the committee would be the development of a standard method of keeping performance records, time studies and cost figures which would include all factors affecting the efficiency of a mechanical loading operation.

In carrying out this project, the committee will make a study of methods now in use by representative companies in different fields of the United States and from these, standard forms for keeping records will be recommended. In selecting this subject it was specifically emphasized that this study would simply recommend forms and that it was not the intention to compile cost or production figures.

Revision of the REVENUE LAWS[†]

- ***Undistributed Profits Tax, Capital Gains and Losses Tax, and Percentage Depletion Provisions Discussed by a Member of the Ways and Means Committee of the House of Representatives***

THE subject of taxation, always a lively topic, is the more interesting and current because of the recent recession in business, followed by, or caused by, the stock market slump. Various causes are ascribed for that phenomenon, and many thoughtful people, as well as thoughtless people, attribute it, in whole or in part, to the Federal system of taxation. It is probable that the vast volume of foreign money used in the stock market, and withdrawn on account of war scares, played a large part in the slump; but there is no gainsaying that many of the factors of taxation contributed to it.

The Subcommittee of the Ways and Means Committee is giving the most earnest consideration to the whole subject of taxation, particularly that of the undistributed profits tax and the capital gains and losses tax. As to the latter, some exaggerated ideas prevail.

In 1928 the national tax from capital gains and losses was \$576,000,000 and from all other income tax sources \$588,000,000. But in 1930 the Government sustained a net loss under this statute of \$15,000,000 while the revenue from other income tax sources was \$491,000,000. A net loss continued in 1931 and 1932. The years 1933 and 1934 produced a small amount of money from this source of revenue, and in 1935 it rose to \$85,000,000, while the national tax from other income tax sources was \$572,000,000. Thus, it would appear that the operation of this statute has a direct relation to the business of the country.

The public mind has come to the conclusion that the undistributed profits tax is too burdensome, and is a deterrent to business. The outright repeal of that statute is being urged, and in lieu of repeal it is suggested that a substantial part of the undis-

By HON. WESLEY E. DISNEY

Member of Congress
First District, Oklahoma

tributed profits be permitted to be held by the corporation as a reserve against a rainy day.

I assure you that a majority in Congress believes business should be given its head; that since we get our taxes from business, business is paramount. This is not merely a political notion that is afloat in Congress. This is in good faith, I assure you, but it has its problems and its vexatious difficulties, and all that you hope for may not be accomplished.

Congress is confronted, not with the desire to levy taxes, but with the absolute necessity to do so. Even as your corporations make up their budgets, so must Congress attend to the budget of the United States. You in this audience are as interested in balancing the budget as Congress is, because a balanced budget puts Government, business, and the individual on a sounder basis. A necessity of the Government precedes each tax. All are agreed upon the necessity for taxation, but universally we object to the individual applications of the tax involved. Congress needs and wants your honest advice—advice not based upon distorted or artificial viewpoints, or just plain hope, but advice based upon a realistic conception of all the facts.

There was a time when students of government believed definitely in the philosophy that government had nothing to do with the economics of civilization. Correctly or not, that theory, that philosophy, has long since been abandoned. Every move in government is directly related to the economic welfare of business and the people. It is a relationship that cannot be severed—a change in universal concepts that none of you are strong enough to combat. It is a tie that

cannot be severed, a sea that will not be pushed back.

Economy in government is not the sole answer, although it is often used as the dogmatic answer to the tax problem. Viewed realistically, there have been times in the immediate past when government spending, making due allowances for all mistakes that have been made, probably saved our national situation. This is not an argument for reckless expenditures, but an attempt to confront ourselves with the facts. We could not say to the hungry "Just don't eat." Whatever other criticism may have been made of the effort to restore the country, the claim has never been made that the effort was not an honest and earnest attempt to meet a distressing situation.

Tax Revision

The Ways and Means Subcommittee is working most earnestly and in the utmost good faith to meet public opinion as to revision of the tax laws, especially the revision of the excess profits tax and the tax on capital gains and losses. It is humanly impossible to bring out a well-rounded tax bill in the special session. There are a multitude of reasons.

I assure you that there is no captious political notion involved. There seems to be a tacit admission that the undistributed profits tax bill goes too far and an agreement that it shall be changed, but it can't be done in this special session, I assure you. Politically it is easy to say that we can do it overnight, but that just isn't true, and no man who will honestly confront himself with the facts will even argue about its being possible.

After the Subcommittee shall have finished its deliberations the Drafting Service will have to whip the proposed bill into form, which will be reported to the full Committee; then, of common necessity and respect to the public, there is the necessity for hearings before the full Committee.

[†] Presented to Annual Meeting, The American Mining Congress, Washington, D. C., December 2, 1937.

After the full Committee has decided on its report, the preparation of the bill itself is most exacting, tedious, painstaking, and time-taking. Then comes the matter of discussion and debate in the House of Representatives, followed by probable long consideration in the Senate. And after that, the time involved in the consideration of the conference report on the disagreements between the two Houses. There are such brain-teasers involved in these discussions as:

ordinary income
net income
surtax net income
normal tax net income
adjusted net income for corporations
adjusted net income for personal holding companies
special adjusted net income
retained net income
undistributed net income
undistributed adjusted net income
supplement P net income
undistributed supplement P net income
earned net income.

Sometimes we come to the conclusion that the number of variations are only equal to the possible number of moves in a chess game.

The undistributed profits tax was passed at the tail end of the 1936 session, with everyone in a hurry in the hope of concluding the session. Like marriages, tax bills passed in haste are sometimes repented of at leisure. I repeat, it is not good judgment even to attempt to conclude this tax bill in the comparatively few remaining days of the special session.

Tentative Plan for Revision of Undistributed Profits Tax

You have no doubt observed in the press detailed plans for the revision of the undistributed profits tax. Keep in mind that these plans are only tentative, but it may be safely said that final revision will follow the outline as given to the press by Chairman Vinson.

Under this arrangement the undistributed profits tax will be repealed as to corporations of \$25,000 or less without regard to their undistributed profits, but they will pay a flat income tax of 12½ percent on the first \$5,000 and 14 percent on the next \$20,000.

This would affect 176,000 corporations, or 88 percent of all corporations. The present normal income tax rates, which would be displaced by the new schedule, run as follows: Eight percent on net income up to

\$2,000; 11 percent on income from \$2,000 to \$13,000; 13 percent on income from \$15,000 to \$40,000; and 15 percent on all over \$40,000.

The existing undistributed profits tax schedule, which the new rates would displace is as follows: Seven percent on the first 10 percent of adjusted net income retained; 12 percent on the next 10 percent retained; 17 percent on the next 20 percent; 22 percent on the next 20 percent; and 27 percent on the next 40 percent, etc.

For corporations of more than \$25,000 net income, their rates would depend upon the amount of income not distributed in dividends, but the rates would be levied against the total net income. The tentative plan is that 20 percent would be the highest rate and 16 percent the lowest, gradations between those two rates at .4 of 1 percent for every 10 percent of earnings distributed. We are trying to keep this rate down to 20 percent, although it was suggested in consideration of the undistributed profits tax that a flat rate of 22½ percent, or even 25, might be possible.

Under the present undistributed profits tax statute, a corporation with a net income of \$25,000 would pay \$7,422.55 if it retained all of its dividends. Under the proposed plan, it would pay 12½ percent on \$5,000, and 14 percent on \$20,000, or a total of \$3,425.

As I have stated, the tentative plan puts 20 percent as the highest rate of tax for corporations over \$25,000. Under the present undistributed profits statute, corporations retaining all or the greater portion of their dividends would pay a tax greatly in excess of the 20 percent agreed upon by the Subcommittee.

There seems to be sound public policy in having some incentive in the law for the distribution of dividends for our larger companies, especially the closely held corporations.

The question arises: if we are going to abandon or modify the undistributed profits tax, cannot this relief be made retroactive to January 1, 1937?

There is no legal barrier to the retroactive modification of the undistributed profits tax, nor its abandonment. From the revenue point of view, more revenue could be secured if the tax were modified or discarded for 1937, if we assume that the rates which would replace those contained in the undistributed profits tax would be appreciably higher than the existing normal tax rates. The undistributed profits tax rate structure has caused the fixing of dividend policies,



HON. WESLEY E. DISNEY

in the average case, upon a basis designed to secure the least possible tax liability. The bulk of corporate earnings has been *paid out* in dividends, or *commitments have been made* under which earnings will be distributed in dividends before January 1, 1938.

This income to the stockholders will be taxed under the individual income tax. If all corporations were now in the same condition, such a plan might be practical, but they are not. For example, a company with a net income of \$100,000 for 1937 decides, in view of the undistributed profits tax, to pay out 70 percent, or \$70,000 in dividends (which has been about the average distribution). Under the undistributed profits tax, it would pay \$15,348.40. Now, if this tax were modified retroactively for 1937 at the rates tentatively set by the Subcommittee of the Committee on Ways and Means, this company's tax liability would be increased to \$17,200, or an increase of over 12 percent.

Then it may be inquired: Should there not be some cushion or outright exemption for corporations which are prohibited by State law from paying dividends because of impaired capital?

There is a considerable variety of opinions regarding this. While, on the one hand, it is harsh to subject companies that are prohibited by State law from paying out dividends, to the same burden that is applicable to companies similarly situated, which are free by law to pay dividends, but which refrain from doing so by their own choice; on the other hand, it would also prove inequitable to allow the re-

lief to taxpayers in one State just because that State happens to have such a law, while taxpayers in an adjoining State who are similarly situated, but have no comparable State law, get no relief.

It would seem fairer to base the "cushion" or relief provision upon a measure more likely to prove uniform throughout the country. If the State laws prohibiting the payment of dividends are examined, it will be found that, except in the case of public utility, financial or insurance corporations that are quasi-public in nature, this prohibition is based upon the debts owed by the company. Thus, to secure a uniform application, the relief provision should be based upon the debts themselves and not upon the State laws passed with respect thereto.

It should be pointed out that considerable sentiment exists against allowing relief for debt-ridden corporations, particularly if the tax is modified to only a 4 percent spread between total distribution and total retention of dividends. A number feel that, since no allowance is made for debts owed by an individual, in the case of the individual income tax, there exists no necessity for relief in the corporate case.

Tentative Revision of Capital Gains Tax

Under the present law of capital gains and losses, gains for the first year are taxed at full value. Gains on profits held longer than a year are subject to tax at the following percentages of the amount gained:

1 to 2 years.....	80 percent
2 to 5 years.....	60 percent
5 to 10 years.....	40 percent
More than 10 years ..	30 percent

It is found that 35 percent of the taxes come from gains during the first year, and 34 percent from gains on properties held more than 10 years, with only 31 percent in the intermediate years. In other words, those who can hold for 10 years are only charged on 30 percent of the profits, and deliberately hold their property instead of making the turnover.

Under the tentative arrangement by the Subcommittee, first year gains would continue to be taxed in full, and the time limit would be five years instead of 10; after one year a gradual reduction of 2 percent a month on the amount of gains tax, running down to a taxation of 40 percent of the gains at the end of five years to a 16 percent rate. I believe this will be helpful.

Losses may be carried forward from one year to the next, but for computation purposes, losses will not be permitted to exceed gains.

You may be interested in inquiring if there are prospects for the substantial reduction of the tax on capital gains. It has been suggested that a reduction of the rates would be an aid to trade. Probably it would. How much, we do not know. But we do know that the man who works a whole year for, say \$10,000, should not be charged a higher rate than the speculator who makes \$10,000 in an overnight transaction. In other words, the rates should be the same. The Committee believes that we will, by the tentative program outlined, meet many of the arguments about capital gains and losses.

You may inquire: What is the prospect for a substantial reduction in the higher surtax brackets, and if such reduction is made, would there be any changes in the lower surtax brackets?

It would take only a small increase in the rates applicable in our lower and middle brackets to offset a considerable decrease in the rates which are imposed in our top brackets. If it is the purpose to keep our revenue constant and to be sure that no loss occurs regardless of the revision made, it is obvious that for every relief or reduction given there must be a corresponding increase at some other place in our tax structure. Thus, if rates applicable to the top brackets were reduced, increased rates in the lower brackets might logically be expected.

It is suggested in some quarters that we broaden the base and reduce the exemptions, and that will take more money out of the average man, the so-called middle class. That will raise a tremendous lot of money and there are several other ways that a lot of money can be raised. A manufacturer's excise tax would raise a lot of money. An addition to the liquor tax would do the same thing. The budget can be balanced and not destroy any lives if we really go at it.

We hope to dispose of some nuisance taxes. That will not be an easy matter, unless we go into other fields of taxation, such as broadening the base and lowering the exemptions for individual income taxpayers.

Percentage Depletion

You of the American Mining Congress will be particularly interested in the matter of the percentage depletion for mining products.

Much of what I shall say will be

substantially a repetition of my speech at Chicago on the subject of percentage depletion allowance for oil wells.

I make no pretense of introducing to you anything new or unusual in the presentation, because the subject matter has been touched upon by the best minds in the country, and every phase of the subject has been thoroughly explored, discussed, and digested. The courts have decided it; the legislators have looked into it; the Treasury Department has made the most exhaustive study of the subject; the Congress has considered it many times. Many articles and speeches have heretofore been prepared relative to this important matter, all with the result that the present statute has been regarded as sufficient and satisfactory.

Renewed interest in the subject of depletion is current because, notwithstanding the fact that in 1933 the Treasury recommended its revision, which advice Congress declined to follow, the President, at the instance of the Treasury Department, recommended in his message on tax evasion in June 1937, that the depletion clause be revised, and sent to the Congress a message dealing with the prevention of income tax evasion. Therein was set forth a letter on this subject from the Secretary of the Treasury which had been addressed to the President under date of May 29, 1937.

This most recent challenge originally arose during the deliberations of the 73d Congress, while a general revision of the Federal tax laws was under consideration. It is a forthright challenge.

Consequently, although much has been written, said, and thought on the subject, it is of interest to restate the issue and retrace the history of the depletion clause now on the statute books, as well as the basic reasons for its existence.

Until reduced to possession, minerals are in unknown quantities, except for estimates. This property ownership is as certain as the title to merchandise, and as certainly taxable, but the method must necessarily be different.

No one would claim that the owner of a carload of flour should be taxed for income upon every unit sold, because that would result in the taxation of capital, always held by the courts to be in violation of the Constitutional provision against taxation of capital. The 16th Amendment only provides that Congress shall have the power to levy and collect taxes on incomes. Obviously, the disposal of

capital assets is not income, properly taxable.

No less a personage than Justice Brandeis, in U. S. v. Ludey, 274 U. S. 295, in 1926, sustained this theory. His statement was most definite. He said:

"The depletion effected by operation is like unto the using up of raw material in making the product of a manufacturing establishment. As the cost of raw material must be deducted from the gross income before the net income can be determined, so the estimated part of the reserve used up is allowed.

"The fact that the reserve is hidden from sight presents difficulties in making an estimate of the amount of the deposits. The actual quantity can rarely be measured. It must be approximated. And because the quantity originally in the reserve is not actually known the percentage of the whole withdrawn in any year, and hence the appropriate depletion charge, is necessarily a rough estimate. But Congress concluded, in the light of experience, that it was better to act upon a rough estimate than to ignore the fact of depletion . . ."

This depletion was not granted by Congress as any special privilege. It was not a subsidy. It is, rather, a striking evidence of the desire of the Congress of the United States to make sure that the taxes it levies are fair and equitable. It recognizes the fact that each ton of mineral or barrel of oil which is sold represents the disposal of a part of the capital of the owner of that mine or oil well.

Receipts from production are not like the receipts of a manufacturing institution. The original capital invested in a factory may have been expended for buildings, machinery and equipment, which are used in production. The product, when sold, does not represent a portion of that capital. The buildings and the equipment may decrease in value. That is obsolescence, and is cared for by Congress in a special provision for obsolescence or depreciation in all industries. The mining and oil industries also have that obsolescence allowance in connection with their plant and equipment, but when these industries, unlike the shoe factory, sell their mineral products, they are depleting their own capital, and the receipts therefrom cannot all be accurately classified entirely as income.

Both the Congress and the courts have recognized the right of those engaged in the development of natural resources to a return on their capital,

tax free, since the very inception of income taxation. The principle of depletion has not been seriously challenged.

Once before, in 1933, following the adoption of the percentage method, the Secretary of the Treasury made a similar recommendation. Congress, after careful consideration and with a thorough understanding of the subject, rejected the recommendation. It is clear that to have that recommendation prevail now, new evidence must be produced and new arguments advanced.

The argument now advanced isn't that the percentage principle is wrong but that the rates are too high.

For several years prior to 1926, when the method was first introduced into the law, the principle was advocated by students of the subject who had, through careful analysis, been able to demonstrate the relation between depletion based upon value and according to the units extracted annually and the principle of a depletion deduction each year upon a definite percentage basis. In other words, they had been able to reduce, through actual experience, the depletion allowance according to value to a formula based upon a percentage of income.

Exhaustively Studied in Past

This conclusion was reached not only by members of the industry but also by those who, representing the Government and the Congress, had been charged with the duty of recommending the best method of putting into effect the depletion principle recognized in the revenue laws and confirmed by numerous Supreme Court decisions. The clearest exposition of the entire subject was that contained in the report to the Joint Committee on Internal Revenue Taxation by its staff, submitted to the Committee on September 17, 1929. That report reviewed the history of depletion, analyzed its application under the various laws which had been in force prior to that time, and clearly demonstrated the necessity for a more equitable and less costly method of arriving at depletion allowances for mines than those which had previously been followed in the administration of the income tax laws. It clearly pointed out the following advantages of the percentage method:

(a) Greater uniformity and certainty in computing depletion.

(b) Greater stability of revenue, bringing more tax from the industry in lean years and placing the stability

of revenue received from mining on a basis comparable with other industries.

(c) A more equitable result, both as related to mining in comparison with other industries, and as between the different branches of the mining industry itself.

Additional advantages of the inclusion of the percentage method are the savings in the cost of administration not only to the Government but to the industry itself. These costs had previously constituted another source of inequality between the different branches of the mining industry and between individual producers within those branches. The percentage method, by its simplicity, gives justice to those individual operators who are financially unable to employ the technical staff necessary to justify their proper allowances for depletion under other methods.

In hearings before the Joint Committee in 1930 and before the Finance Committee of the Senate in 1932, these defects in the administration of the law prior to that time were specifically pointed out. The members of the Finance Committee of the Senate in 1932, who recommended the adoption of the amendment providing for percentage depletion as applied to the metal mining, sulphur and coal industries, had before them a complete picture of the experience in administration of the laws prior to that time, and recommended the amendment which was later adopted by the Congress, with a thorough understanding of those difficulties, of the effect of the amendment upon the revenues, and of the removal by the amendment of the inequities and discriminations theretofore existing.

To do away with this principle now would be to disregard experience, to disregard the logic which led to the adoption of the method, and would assume that the members of Congress who adopted the percentage amendment were ill advised and that experience since the adoption of the amendment has demonstrated that mistake. It is not unreasonable to insist that definite proof of this un-wisdom be produced before going back to the difficulties and inequities which the most experienced staff of the Government, that of the Joint Committee on Internal Revenue Taxation, so concisely condemned. And to reduce the rates at this time would be another admission that the rates were incorrectly calculated. The desire for revenue at this particular in-

stance, and the necessity for it, would not justify in my judgment the threat to business that would be involved by even a slight reduction in the rates, both in the mining industry and in the oil business.

Not only was the method of percentage depletion written into the law after long experience with the method based upon value and depletion according to the number of units extracted during a taxable year, but the rate of percentage was also arrived at after a thorough consideration of the relation of the rate to the value. In addition to this, the experience of years was taken into consideration; it was found, for example, that the weighted average of depletion in metal mining over a period of representative years amounted to 17 percent of the gross income from the operations. When the amendment was written it was decided to fix the rate at a figure which would yield the Government even greater total revenue than had actually been collected during those years. Accordingly, the rate was fixed at 15 percent of the gross value. It is not an arbitrary figure. This was further limited to 50 percent of the net income.

Experience has shown a definite relation which might be expressed in figures of percentage between the gross production and the value of the mineral in the ground, which equity determined should be returned to the owner to refund his capital during the course of operation. This deduction coupled with the actual experience as shown in the report heretofore referred to, to the Joint Committee on Internal Revenue Taxation, furnished the basis for the percentage depletion rates.

The depletion allowance is based upon the principle that the present owners of a mining property are entitled to a return of the *value* of their property tax free. The value is that of the ore or coal in the ground. To apply any other principle would result in a direct discrimination between those engaged in the same line of business, would involve the Government and the taxpayer in endless controversy over cost and cost factors, and would disregard entirely the principle that depletion is an allowance for a return of actual and present capital.

We must never lose sight of the fact that mining is a business in which investments are made without a definite knowledge of the value in dollars of the property itself. The actual capital of a mining corporation is the mineral in place in the ground, to-

gether with the improvements thereon and working funds. Since the 1916 law the principle of depletion, according to the March 1, 1913, value, has been in effect. The method followed until the adoption of the percentage method of depletion under the analytical appraisal method recognized value of the mineral in the ground as the controlling factor.

It must not be forgotten that we are dealing with an industry and not with individual enterprises. The accident of ownership of the property in question should not control in the application of a principle inherent in the nature of the operation itself. If the principle of depletion is to be administered so as to be equitable to all those engaged in the industry, it must recognize the fact that as long as there is value in the mine there is capital, and that capital is the property of the present owners who carry on the operation during the current tax year.

From the standpoint of the general welfare of the Nation there is nothing more important, aside from the production of foodstuffs and materials entering into clothing, than the production of metals, coal, sulphur, oil and gas. The risks incident to the development of these natural resources are so great as to be worthy of recognition by members of Congress who desire to frame tax laws in a manner to encourage the investment of private capital in this hazardous business. To place each mining operation upon a basis of money-cost and to establish the principle that when that money-cost of that particular operation shall have been returned, then depletion allowance will cease, (that is what is involved if we follow the suggestion of the Secretary of the Treasury, that when a mine has returned its cost, then depletion should be out) would be to disregard the experience within the industry itself of the numerous failures from which no return whatever has been made to the original owners.

In the oil business, men have spent their lives drilling dry holes. Governor Marland of Oklahoma began drilling on the school lands of the State, and he drilled 19 consecutive holes before he finally struck a good oil well. Under the old doctrine, he would get nothing for his venture in dry holes and would only get credit where he got a well. It would be a case, as far as the Government is concerned, of "heads you lose and tails I win." It would in effect be saying to the mine operator, "You take the risks—if you fail, you

lose all; if you are successful, we cannot allow you to deduct as capital return anything save the cost of the one particular operation which was successful."

No, this principle of depletion must continue as long as there is value to be extracted because that value exists as a reality. Without the extraction of the mineral deposit and its conversion into a merchantable product it would have no value to either the Government or the operator. When the operator takes possession of that and begins to extract it, it has a capital value in the ground. When he has extracted it and placed it in commerce, it has a value over and above that. The difference between those two values is the income to the operator, and if mining is to continue and capital to be available for the risks of this hazardous business that principle must be recognized.

There is one other thought in connection with this, and that is that the mining business is carried on largely under corporate form. A corporation organized today may pay \$100,000 for a mining property; it may spend another \$100,000 in its development. When it has reached that point and there is a known body of mineral ready for production, it has a value perhaps many times over and above the original investment. The original owners of the shares in this corporation may desire then and there to realize upon their investment, and very frequently they do. Now shareholders paying for their shares a price commensurate with the known value of the property at that time come into the picture. As far as they are concerned—and they are the beneficial owners of the property at that time—the capital which should be returned tax-free is the value of the mineral remaining in the ground.

This proposal to reduce percentage depletion is a definite threat, gentlemen. My advice would be the age-old slogan, see your Congressman, because the Treasury is here and with us pressing its case, and you have the same right as taxpayers to present your case as has the Treasury as tax collector, and it is not a matter to be let alone or idly passed up. It is just as important now to retain your percentage depletion and your present rates as it was to secure them originally, and it would be the utmost folly for you to sit idly by and neglect the matter and let the rates be reduced.

STREAM POLLUTION and the MINING INDUSTRY[†]

• *Drastic Features of Pending Legislation Outlined; Local Control Advocated as Better Solution*

By ROBERT M. SEARLS,
of the San Francisco Bar

I HAVE been asked by the program committee to present to you today some phases of the subject of stream pollution and its relationship to the mining industry. The subject is a very broad one and might be treated from several aspects. Historically, stream pollution has been an ever present problem in the mining industry since the early days of hydraulic mining in California and the imposition of the Federal court's injunctions which terminated that industry for more than one-third of a century. Legally, stream pollution has been a subject of acrimonious disputes between rival appropriators and owners of riparian rights since the days of the early common law. Technically, the problems arising out of stream pollution from sewage and factory wastes have been under consideration by sanitation and industrial engineers for decades. I take it, however, that the present day problems of stream pollution will be of greatest interest to this assemblage, particularly those which have to do with threatened regulation by public bodies and the agitation which is now going on by sportsmen's associations for the purification of our streams in the interests of fish, game, and wild life generally. The matter has received the serious attention of Congress and of many of the State legislatures at this year's sessions. I shall therefore prefacce my discussion with a statement of the case for regulation as made by one of the most enthusiastic representatives of those who are seeking to prevent stream pollution at any cost.

[†] Presented to Metal Mining Convention, Western Division, the American Mining Congress, Salt Lake City, Utah, September 7, 1937.

At the hearings before the Subcommittee of the Committee on Commerce of the United States Senate, Seventy-Fourth Congress, the representative of the National Association of Audubon Societies for the Protection of Birds and Animals, made the following statement with respect to stream pollution (Report, page 233):

"Our organization, with a membership numbering thousands throughout the country, is vitally concerned as to the existing pollution of our streams, lakes, ponds, and rivers. Pollution that has decimated all living things dependent directly or indirectly upon these bodies of water for food. This loss is many sided. With birds, fur bearers, and fish gone, our waters cease to have recreational value and this alone brings a great economic loss to the neighboring communities. The loss of fish which these waters, if pure, might have supplied, furs that might have been trapped, is too apparent to need further mention. The runs of migratory shad, salmon, and other food fish are rapidly dwindling. Our hard pressed ducks and geese, suffering already from excessive drainage of natural swamp areas, find a larger and larger number of the remaining bodies of available water polluted to such an extent that they cannot feed and must crowd on into areas already congested and overpopulated.

"These are the obvious results of pollution, but we run across its menace to our wild life in numerous ways. To mention one, let us take the condition in late summer over great areas of this country when surface water is at its lowest levels: All birds require fresh

water for drinking and bathing and yet it is a fact that in many regions every available body of surface water is polluted to an extent sufficient to cause the entire bird population to leave the region, removing from farms and orchards these valuable insect destroyers.

"What do opponents of these bills now before you say? Do they claim there is no serious pollution? Do they deny the advantages of clear, unpolluted water? Not at all. They admit damaging pollution. To abatement they raise the objection of the cost of proper treatment of industrial wastes. They threaten forced shut-down of plants. They fall back on the claim of encroachment of State rights, although these bills provide for State participation in the mechanism of abatement. Must such considerations continue to require the citizens of one community to drink the sewage of a neighbor in another State? Must the social and economic welfare of the people continue to be undermined for the temporary benefit of a few? Must the threat of disease epidemics, spread by polluted waters, always follow every serious flood on our rivers?

"In the name of thousands who enjoy the recreational and aesthetic value of pure streams and lakes, and the abundant bird population they support, we ask that you report favorably on Senate bills 3958 and 3959."

The Senate bills to which the gentleman was referring were known as the Lonergan bills. They were introduced by Senator Lonergan of Connecticut and were strongly sponsored by Senator Guffey of Pennsylvania.

The principal proponent of the bills was a young deputy attorney general from Pennsylvania, Mr. Grover C. Ladner.

Origin of Pollution Bills

The story of how these bills came before Congress is of particular interest. I do not know who drafted them. I suspect Mr. Ladner had a good deal to do with them, but the agitation was, curiously enough, started in the War Department. The Secretary of War was induced to call a conference of various opponents of stream pollution. Notices were sent to all the members of the Isaac Walton League, the Audubon Society, and numerous outdoor societies. The conference was arranged by either Senator Lonergan or Senator Guffey. As the reports show, not one single representative of industry was present at the conference or was even invited to be there. A huge volume of letters was gathered by the proponents of the bill, from fishermen all over the United States, and a reporter was brought along to the War Office to take down these statements. They fill about 60 or 70 pages of the official report of the Senate Sub-Committee. The conference at the War office was a convenient medium to get them into print.

Armed with the report of this one-sided conference in the War Department, Senator Lonergan introduced his bills, which were referred to the Commerce and Navigation Committee, and then to a sub-committee, of which Senator Hattie Caraway was chairman and Senators Lonergan of Connecticut, Guffey of Pennsylvania, and Gibson of Vermont were the remaining members. The War office proceedings were printed as a Senate Document for edification of the Senate and the public. Mr. Ladner made a lengthy argument in favor of the bill, in which frequent allusions to its provisions as a "*planned solution*" of all the country's pollution evils were made. At this hearing, for the first time, industry was permitted to present its side of the question and the views of the responsible authorities in the United States Bureau of Public Health were heard. None of them advocated, and most of them opposed, the drastic powers conferred by the Lonergan bills. The Secretary of War, who had called the original conference, did not approve them. Nevertheless, the most objectionable features were added to another bill introduced by Senator Barkley, and they passed the Senate. The Barkley bill

as amended was sent to conference in the House, where it still remains.

Aims of Amended Barkley Bill

What does this bill propose to accomplish? First of all, the imposition on all industry of regulation by a huge Federal organization having nation-wide control of pollution in streams, with authority to promulgate orders and rules; to prescribe what is and what is not injurious pollution; and to prevent it with the aid of court action if necessary. The Division of Water Pollution Control, which is the title given the Commission, is authorized to appoint attorneys and experts, and all the officers and employes that it deems necessary for its work. It is true that Section 3 authorizes the Committee to cooperate with agencies of the several States, but past experience with Federal Boards of this type indicates that they are more concerned in absorbing the authority of the State agencies than they are in cooperation. The Committee is authorized to promote interstate compacts to prevent

water pollution, to make studies and surveys, and to establish sanitary water districts and define their boundaries, to prevent the pollution of waters within the district by either voluntary or mandatory proceedings, to make loans and grants in aid of the prevention of pollution, and last but not least, after three years to commence injunction proceedings in the name of the United States and with the aid of the Attorney General to enjoin the "discharge or deposit of any waste or other substance, whether in a solid, gaseous, or liquid state, into any of the navigable waters of the United States, or into any tributary from which the same may flow or be washed into any of such navigable waters, in violation of regulations promulgated by the Board, if such waste or other substance is or may be injurious to public health, domestic animals, or poultry, fish or shell fish, or other aquatic life, migratory water fowl, or other wild game, or impairs in any manner the utility of such waters for navigation purposes." Such deposit of waste is declared to be a nuisance. The grounds for establish-

ment of Federal authority are specified to be powers of the United States to regulate interstate commerce and navigation; to extend, change, and amend the Admiralty and Maritime Law; to give due effect to the Migratory Bird Treaty; and to protect the fisheries, particularly the anadromous fish.

It is not my purpose in this discussion to enter into a legal dissertation on the constitutional powers of Congress to impose such regulations on intrastate streams or upon intrastate industries located along navigable streams or their tributaries. That

no such power exists seems clearly established by many rulings of the Supreme Court. But the extent to which the constitutional powers of Congress may be stretched over purely local affairs through a strained interpretation of the interstate commerce provision, the foreign treaty provision, and the regulation of navigation is of course a perilous subject upon which to speculate at the present time. I desire rather to indicate to representatives

of the mining industry how widespread is the campaign for abatement of stream pollution and the possible effect that laws such as those proposed by Senator Lonergan may have upon the industry.

Pollution a Concomitant of Industrial Expansion

On the other hand, those who are fighting the battle against stream pollution need not be unduly criticised. It is an inevitable consequence that such a battle should be fought because of the vicious circle in which we live and move. American civilization has been a continuous history of encroachment upon nature. The primeval forests gave way to farms and villages. The Indians were driven back into the tribal reservations. Wild life was largely exterminated. Rivers have been harnessed for water power, hydroelectric plants, and, in the far West, for irrigation. With the advent of the age of invention and machines, a free field was given for the development of infinite diversity in human economic demand. The enor-



ROBERT M. SEARLS

mous growth in manufacturing industries flooded the country and even the world with consumers' commodities and capital goods, and magnified the utilization of raw materials beyond measure. The growth of industry brought tremendous concentration of populations in industrial centers. These populations and the industries which they created and which created them, brought about an incredible volume of waste. This in turn created the sewage and stream pollution problems of the present day.

It is inevitable that it should have done so. Industry has made notable advance in the utilization of the raw materials on which it works in the manufacture of useful by-products and residuum. Nevertheless, a tremendous waste results and always will result. The larger the industry, the larger the necessary waste. These wastes accumulate and must either be destroyed or carried away. Water flows down hill. Water is a great solvent and a great carrier of material that can be either dissolved or finely divided. Hence it is that the wastes tend to be carried to the low points, which means to the streams, ponds, and arms of the sea. As the concentration of waste increases the pollution problem arises. It is of course most aggravated in the eastern industrial States, where the detrimental effect upon fish life and bird life in the streams is very pronounced.

The law has long afforded a remedy in money damages, and in some cases by injunction, to a riparian user or appropriator of the waters of a stream where it has been unreasonably polluted to his damage. But this remedy is not available to the itinerant sportsman. His right to shoot or fish, as well as the right of down-stream populations to protection against disease from sewage pollution must be enforced if at all by public authority.

Sportsmen Advocating Stringent Regulation

It is always upon aggravated situations like this that the professional politician seizes to excuse the creation of a new nation-wide bureau or department with many jobs to dispense and much public money to spend. The politicians in this case have been aided and abetted by thousands of citizens. Curiously enough, it is not the public health authorities of the nation who are advocating the passage of the Barkley-Lonergan bills. It is the sportsmen and sportsmen's societies. The possibility of catching fish and shoot-

ing ducks has been reduced due to stream pollution in some places, and at some seasons of the year. Migratory birds can no longer land in their flights on ponds which have become covered with the waste of refineries or manufacturers. Chemical poisons have in cases affected the life of shell fish. It is claimed that mine debris and tailings cover the beds of streams and destroy fish food. The cry of sportsmen has been enormously augmented and largely financed by the dealers in sportsmen's supplies, the fishing resort owners, and last but not least, by the sport editors of the daily newspapers and publishers of sportsmen's magazines. Here is something which makes news, which furnishes the basis for a campaign,—something to write about,—an issue on which to build circulation. It is therefore a formidable array of proponents, many of them fanatical in their opposition, well financed, and with ample opportunities for publicity, with which industry has to contend in opposing the Barkley-Lonergan bill and similar measures.

The conflict is not only in the Congress of the United States. It exists in practically every State in the Union, and it is growing. The reaction of the sportsmen to interference with his God-given privilege to fish or hunt alleged to be due to stream pollution is, "There ought to be a law to stop it." Stop what? Stop water from running down hill? Stop soluble substances from going into solution? Stop oil from floating or tailings from sinking in water? Of course not. That is not what the sportsman seeks to stop. He seeks to stop everybody from putting harmful waste where it can flow or wash into streams. This sounds simple, but it is not. Industrial waste represents the refuse of human economic effort. Except to the extent that it can be economically controlled within industrial operation, to stop it is to stop the wheels of industry, throw men out of work, deny human demands for products of industry.

On the other side of the picture, the resort owners and the dealers in sports supplies, who are largely financing the battle, say, "Destroy the fish and game and you destroy us. We intend to battle for our lives, too." Then, too, there is the cry of the public health authorities, whose principal concern is with stream pollution due to sewage,—and here the cities and towns are the worst offenders. Their answer is, "We have no other place to dump our sewage, and as long as we have cities and

towns we are going to have sewage and must dump it somewhere." If the credit of the municipality is insufficient to carry the effluent a long distance and dispose of it by expensive means, then it must be dumped locally. The problem is there. It is growing more and more acute, and the question remains,—What is to be done about it?

Pollution a Local Problem

In the first place, industry must not hide its head in the sand. Unless cooperation is given to the extent that it can reasonably be given, the excuse for regulation will exist, and in my opinion regulation by law or by administrative tribunals will follow. In the second place, we must do our best to impress upon the public, and through the public upon its legislative representatives, that stream pollution is essentially a local problem. It may or may not be an interstate problem, depending upon the locations of the particular industries and the particular streams; but it is a *local* problem and, being a local problem, it should be locally regulated, if necessary, and not placed under a Federal bureaucracy.

The Federal Government can do much to help. The United States Bureau of Health has the facilities, the men, and the appropriations to make scientific studies as to the best, most efficient, and least expensive ways in which different industries can eliminate harmful pollution. Industry should be given the benefit of these studies. In many cases where pollution is serious and the expense of removing it prohibitive, in so far as local industries are concerned, Federal grants in aid of abatement of the pollution could well be justified. Where there is an interstate problem the Natural Industries Committee, or the Bureau of Public Health could very well bring to the attention of the responsible authorities in different States the desirability of interstate compacts under which the evil might be cured. But there I believe Federal intervention should stop. No Federal board has yet proved itself so wise, so free from political influence, or so impartial that it can be trusted with the task of framing regulations prescribing what is and what is not unreasonable pollution, where the enforcement of those regulations might annihilate industries in one locality or, what amounts to the same thing, place them at a hopeless disadvantage in competing with industries in another locality. Federal bureaus are notoriously more

concerned with the precedents created by each decision and uniformity of policy than in distinguishing the requirements of each case presented.

Better Results Through Local Regulation

But, it will be said, there must be some method for bringing the recalcitrant unreasonable industry which is polluting the streams into line. This, I submit, is a State and not a national problem. Enforcement by local authority can be expected to give much fairer consideration to the problems of local industry than the bureaucratic representatives of any Federal board. The problems of the West are not the problems of the East, and it is almost invariably the case that Federal bureaus send out representatives who are not familiar with local problems and make regulations which do not fit local State conditions. State boards can be expected to use more intelligence in this respect. If I may illustrate,—most of the gold mines of the West are in canyons. All of these gold mines, or nearly all of them, produce mill tailings. Most of the canyons in which the gold mines are situated have streams flowing through them which, directly or indirectly, feed navigable waters, and through them reach the sea. If the mines take no precautions the tailings will wash into the streams, will discolor them for a distance, and the tailings will in the low water period settle to the bottom of the streams. To prevent this it is the custom of the gold mine owners to construct low tailings dams, frequently made with log cribs filled with tailings themselves. During the low water months the water flowing from the tailraces of the mills passes into these reservoirs, the tailing content settles out and the water flows into the adjacent canyon fairly free of sediment. In the winter when the natural erosion washes sediment into the streams and turns them to chocolate color, the mining company opens the gates in its dam and allows the tailings accumulated during the past summer season to flow out. The large head of water in the stream carries them away and the turbidity of the stream is such that their presence cannot be noticed for any considerable distance. They disappear in the huge rush of water and become mingled with the natural dirt erosion so as to be harmless.

Surely this is a reasonable method of handling unavoidable waste. None other is possible. The only way by which all of the tailings could be per-

petually restrained would be to construct expensive concrete or rock fill dams across the canyon, install gate systems, etc. The financial ability of the quartz mining industry and the financial returns from it do not justify any such steps and to enforce them would be to annihilate the industry. Some of the sports enthusiasts would be willing to go that far, but on the whole I think public opinion may be taken as more reasonable, and local public opinion will quite properly influence the attitude of State officials.

In order that a mining community may live, it is necessary that the mines operate. It is much more important that hundreds of men be given work and be enabled to support their families and pay for the supplies purchased from local merchants, than it is that itinerant sportsmen shall be able to catch trout within a mile or so of every quartz mill tailrace. Sound local regulation recognizes this fact, but the type of rigid and unbending Federal regulation under rules prescribed by some board in Washington which we have had, in many instances would be utterly destructive of our industry.

Example of Successful Local Handling

In northern California near the Oregon border we have a stream known as the Klamath River, up which the steelhead and salmon come every year to spawn. In the portion of Siskiyou and Trinity Counties through which this river flows there is practically no industry possible except mining, and this usually takes the hydraulic form, coupled with some dredging. A year-round regulation prohibiting the deposit of tailings in the stream or an all inclusive regulation that no part of the stream shall be muddied with tailings would destroy this mining industry and the livelihood of hundreds of small operators and their employes. On the other hand, to permit these hydraulic mines to operate the year around might prevent the annual salmon runs and destroy a sportsmen's fishing paradise and the business of fishing resort operators near the mouth of these rivers. A fairly satisfactory local solution of this matter has been attained with the aid and approval of the California Fish and Game Commission. All mines which deposit any debris in the streams agree to shut down from July first to December first so that during the low water period of the year, including the period of the salmon run, there is no

mining and no turbidity. The State authorities agree, during the rest of the year, when the streams are full, the mines may operate and the obtainable gold will thus be extracted from the hillsides. I cannot conceive of a Federal board ever bringing about such a solution. It was done by voluntary cooperation between the mining interests and the sportsmen's interests when brought together by local authorities. It can be done elsewhere and in other States under like conditions.

Industrial Cooperation With State Authority Necessary

This brings me to my next point, which is the necessity of industrial cooperation with State authority. In any industry there will always be some chiselers, some people who are so selfish that they refuse to recognize any rights of others. The mining industry is no exception. Where such people are found, the responsible members of the industry, through their local associations, must bring pressure to bear on these recalcitrants and endeavor to show them the necessity of cooperating in the elimination of unreasonable pollution so that the entire industry may not suffer as the result of the delinquency of a few. If persuasion and reason will not accomplish it, then I am of the opinion that the responsible members of the industry, through their local associations, should cooperate in every way with the legally constituted State authorities to enforce the observance of reasonable regulations by the selfish and unwilling minority. If this is done, the opponents of stream pollution, sportsmen and others should be convinced of the bona-fide attempt of industry to cure the evil so far as it can be cured. Steps such as I have just suggested have just been taken by the Gold Producers of California, which is the dredging association of that State, and much has been accomplished in the way of eliminating local complaints against pollution from dragline operations.

What I have said of the mining industry applies with equal force to our brethren in the oil industry, which is apparently the only other natural resource industry in the West having a serious pollution problem. Cooperation in building sumps, in lining them so that salt water does not contaminate adjacent water wells, in neutralizing refinery effluents and in preventing the discharge of oil tanker bilge within reasonable distances of the

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The Wagner Act and Its Effect Upon the Mining Industry[†]

• Summary of Act and Analysis of Pertinent Litigation

I AM not unconscious of the fact that the members of this audience have had that recent and close contact with the National Labor Relations Act—called the Wagner Act—as to give to them a very practical view of its application and an understanding of its intemperies. Notwithstanding this, I have been asked to address myself to the subject of "The Wagner Act as it Affects the Mining Industry."

In approaching such a discussion there may be some advantage to have in mind the conditions which produced this legislation. It was Macauley who said: "Nothing in the past is dead to him who would learn how the present came to be what it is." The Wagner Act is not an isolated thing. It did not spring into being in full flower without historical ancestry. It is obviously a part of that ambit of legislation designed to create a new social order. The spirit which produced it is the same leaven which has been alternately dormant and active in every social order since our beginning. That spirit produced Populism—the evangelism of Bryan—and permitted Theodore Roosevelt to make himself powerful by his attacks upon the wickedness of the then existing social order. No one can criticize the sincerity of these movements. There is not a man here who does not want our economic system so ordered that it will give to all its members the fullest reward available. This will not result from destructive processes—it will not come from legislative fiat—it will come, if it comes in a proper and effective way, from the wisdom born of the experience of mankind. To the extent that coercion, hatred, defiance of law, and untempered power are applied the benevolent purpose will be denied and the result subverted.

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Summary of Act

The first paragraphs of the Wagner Act are significant. Its assumptions are enlightening. They are legislative pronouncements of the necessity of the law itself. They announce as the law of the land the denial by employers of the right of employees to organize, to accept collective bargaining; that there is an inequality of bargaining power between the employers and the employees; that the employers have all of the advantage. The indictment further charges that the employers have so used their power as to injure, impair and interrupt the free flow of interstate commerce. The remedy of this evil is the purpose of the legislation.

The gravamen of the act is that the employees of any person, persons, or corporation engaged in interstate commerce, with certain stated exceptions, shall have the right to organize, without interference or restraint, for the purpose of collective bargaining. When a majority of the employees in any industry or unit of any industry shall have so organized, they shall become the sole and exclusive bargaining agency of all of the employees in such industry or unit, for the purpose of bargaining as to rates of pay, wages, hours, and other conditions of employment. The Act itself in no way requires the employers to agree to any proposal or demand of the employees and does not limit or impair the right of the employees to strike. The Act, in addition, sets forth many unfair practices and fixes the procedure before the Labor Board created for the administration of the Act. The Act

sets forth the method of appeal to the courts from the decision of the board.

That such an enactment, in the field it covers, is more far-reaching than any national legislation heretofore existing is obvious. That it is intended to reach situations not heretofore subject to Federal law is equally apparent. The Federal Government is here, rightly or wrongly, injecting itself into situations which have heretofore been the subject only of State Control.

Constitutional Guarantees of States' Rights

At the time of the adoption of our Federal Constitution the states were extremely jealous of their own sovereignty, and delegated to the Federal Government, either directly, or as later held by the Supreme Court, by necessary implication, only those powers deemed essential to a Federal Union. The Tenth Amendment, immediately following the Bill of Rights, was enacted out of this desire to preserve the powers and sovereignty of the States. It provided:

"The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people."

Article I, Section 8 of the Constitution had provided:

"Congress shall have power to regulate commerce with foreign nations, and among the several States, and with Indian Tribes."

This grant of power, with the limitation of the Tenth Amendment, fixes the power of Congress to legislate with respect to interstate commerce. Any enactment under the granted power must not invade the reserved sovereignty of the States.

At the time of the passage of the Wagner Act the Supreme Court of the United States had been, for more than a century, passing upon congressional legislation under the Commerce Clause, and in its decisions fixing and defining the powers of Congress in this respect.

The development has been most interesting. The only place where the States move upon common ground is in their Federal alliance. Outside of that field they are independent sovereignties. The Federal Government moves in a limited field. All other matters are committed to the States.

Obviously the States, at various times, have had different theories of the functions of government. Some have applied the doctrine of Jefferson, that that people is governed best which is governed least. Others have entered upon a regulatory field and the field of social experimentation. The Federal Government had been more conservative than many States. This resulted, quite generally, in industry seeking an extension of Federal powers, and particularly in contending for the extension of the powers of the Federal Government under the Interstate Commerce Clause and its implications. They contended for a liberal interpretation of the delegated and implied Federal powers. If they could have themselves classed as being engaged in interstate commerce, then they could prevent the States from interfering under State law, with their operations. They preferred regulation by the Federal Government to regulation by the States.

Notwithstanding this tendency, the Supreme Court was thought to have fixed the doctrine that a manufacturing process, irrespective of the source of the materials assembled, or the destiny of the finished product, was an intrastate operation, and therefore not the subject of Federal legislation. This doctrine had been applied recently in the Schechter case involving the validity of the NRA, in the Carter case, and in numerous earlier cases. It must be borne in mind that law suits are different in degree as to the facts, and that law must be specifically applied to particular states of fact. After the decision of the Schechter case many eminent lawyers and judges felt that

the Wagner Act, under the existing decisions, invaded the powers of the States and was in violation of the Federal Constitution.

In addition to the legal objections to this legislation, there was concern that the Act would ultimately result in an elective despotism more serious to our system of government than the stated evils which the Act was designed to correct.

Destruction of Industry Not a Corrective

It was not a solution of the problem if the assumed injustices of industry should be met by the destruction of industry. This result would be as disastrous to labor as to industry. It was argued that the Wagner Act was a one way street along the course of which capital had no protection. A result was feared that is well illustrated by a story recently told by Owen D. Young before the Purdue Institute of American Policy and Technology. Lord Riverdale was examining a Cubist painting. Unable to understand what the artist was attempting to portray he asked, and was advised that it was a cow eating grass. Riverdale asked: "Where is the grass?" "The cow ate it up," was the reply. "Well," he continued; "Where is the cow?" The answer was that the cow would not stay where there was no grass.

Litigation Reviewed

In any controversy of such magnitude as that concerning the Wagner Bill we must concede to both sides sincerity of purpose. As a result, however, of divergent political, economic and legal views it was inevitable that the legislation should be the basis of litigation. When the board was organized and commenced to promulgate its orders, resistance followed. In due course a series of cases reached the Supreme Court of the United States. An examination of these cases in a most general way will aid in answering the problem as to the extent of the application of the Wagner Act to the mining industry. At the risk of covering ground with which you are already familiar I shall attempt a brief review of these decisions. In each case the controlling factor, in order to subject the industry to the orders of the Board, was whether or not the industry in question was an industry, so far as its manufacturing processes went, engaged in interstate commerce. In approaching these cases it must be borne in mind that the fabrication of materials had not

been regarded as interstate commerce even though, as suggested, the raw materials had moved in interstate commerce to the fabricating plant and the finished product had largely moved in interstate commerce from the plant.

Jones & Laughlin Case

The cases in question were decided April 12, 1937. The first case was that of National Labor Relations Board vs. Jones & Laughlin Steel Corporation. The steel company was charged with unfair labor practices in that it was discriminating against union members with regard to hire and tenure of employment and was interfering with the self organization of the employees. Particularly, according to the charge, some employees had been discharged for union activity. The charges were sustained by the Board, the company ordered to desist, and to make good the losses in pay. The company disregarded the order, whereupon the Board petitioned the Circuit Court of Appeals to enforce the order. The Court of Appeals denied the petition upon the ground that the order was in excess of Federal power. The supreme Court of the United States granted certiorari (a review of the case). The facts relative to the business of the Jones & Laughlin Corporation, as found by the Supreme Court, are briefly these:

"The Jones & Laughlin Steel Corporation was organized under the laws of Pennsylvania. It has its principal place of business in Pittsburgh. It is engaged in the business of the manufacture of iron and steel, in plants situated in Pittsburgh and nearby Aliquippa, Pa.

"The company has 19 subsidiaries, completely integrated, owning and operating ore, coal and limestone properties, with lake and river transportation facilities and terminal railroads located at its manufacturing plants. It owns or controls mines in Michigan, Minnesota, Pennsylvania and Virginia. Much of its product is shipped to its warehouses in Chicago, Detroit, Cincinnati and Memphis. Approximately 75 percent of its product is shipped outside of Pennsylvania. The Board summarized the operations as follows:

"The operations of the company 'might be likened to the heart of a self-contained, highly integrated body. They draw in the raw materials from Michigan,

Minnesota, West Virginia, Pennsylvania in part through arteries and by means controlled by themselves; they transform the materials and then pump them out to all parts of the nation through the vast mechanism which the company has elaborated."

Mr. Justice Hughes, writing the opinion for the majority of the court, then reviewed the provisions of the Act, the powers conferred upon the Board and the definitions of the terms involved.

It was necessary in order to hold the Act constitutional that the Court hold that its provisions were intended to apply only to industries and units found to be a part of interstate commerce. In this connection the Court uses this language:

"The grant of authority to the Board does not purport to extend to the relationship between all industrial employees and employers. Its terms do not impose collective bargaining upon all industry regardless of affects upon interstate or foreign commerce. It purports to reach only what may be deemed to burden or obstruct that commerce and, thus qualified, it must be construed as contemplating the exercise of control within constitutional bounds."

Under the facts of this case and the limitations placed upon the purpose of the statute the Court found that the operations of the Jones & Laughlin plants bore such close and substantial relation to interstate commerce that Congress had the right to control them for the purpose of protecting that commerce.

The Court issues a very significant warning and limitation, when it says:

"Although activities may be intrastate in character when separately considered, if they have such a close and substantial relation to interstate commerce that their control is essential or appropriate to protect that commerce from burdens and obstructions, Congress cannot be denied the power to exercise that control. Undoubtedly the scope of this power must be considered in the light of our dual system of government and may not be extended so as to embrace effects upon interstate commerce so indirect and remote that to embrace them, in view of our complex society, would effectually obliterate the distinction between what is national and what is local and create a completely centralized government. The question is necessarily one of degree."

The following language from this same opinion is enlightening:

"When industries organize themselves on a national scale, making their relation to interstate commerce the dominant factor in their activities, how can it be maintained that their industrial labor relations constitute a forbidden field into which Congress may not enter when it is necessary to protect interstate commerce from the paralyzing consequences of industrial war?"

As a further limitation and interpretation of the Act the Court says:

"The Act does not compel agreements between employers and employees. It does not compel any agreement whatever. It does not prevent the employer 'from refusing to make a collective contract and hiring individuals on whatever terms' the employer 'may by unilateral action determine.'"

Having decided that the manufacturing processes of Jones & Laughlin Corporation were a part of interstate commerce, or were integrated in interstate commerce, the Court overruled the Circuit Court of Appeals and sustained the decision of the Labor Relations Board.

Other Pertinent Cases

Another case before the Court, decided on the same day, is that of the Board vs. The Fruehauf Trailer Company. The trailer company was organized in Michigan and had its plant in Detroit where it manufactured commercial trailers. It had thirty-one branch offices in twelve different States. More than 50 percent of the materials it used were shipped from without the State of Michigan and more than 80 percent of its products were sold without the State of Michigan. The manufacture of the trailers was held by the Court to be so related

to interstate commerce as to subject the employees engaged in such operation and the corporation to the provisions of the Wagner Act.

The same day there was decided by the Court the case of the Board vs. Friedman-Harry Marx Clothing Company. The clothing company was a Virginia corporation with its plant in Richmond. It was engaged in the manufacturing of men's clothing. More than 99 percent of its woolen and worsted goods came from without the State of Virginia and about 83 percent of its sales were without the State of Virginia. This again was held to be a manufacturing plant subject to the provisions of the Act in question.

To each of the opinions above cited four of the Justices of the Supreme Court filed a vigorous dissent. They were Justice McReynolds, who wrote the dissenting opinion, Justice Sutherland, Justice Van Devanter, now retired, and Justice Butler.

One of the most interesting of the cases decided by the Court on the same day as the above cited cases, was

that of the Board vs. Associated Press. The Associated Press had discharged an editorial writer named Watson. As you all know, the Associated Press gathers its news from the ends of the earth, assembles it at its New York office, revises it and distributes it to its members throughout the world.

The Court held that Watson was engaged in interstate commerce; that he was wrongfully discharged because of his union activities, and that he should be reinstated and compensated for his loss of time.

Many Similar State Laws

The above cases indicate the entry of the Federal Government into a new field and may convey to you a fair idea as to whether or not your individual operations come within the purview of the Act. It must be borne in mind that out of an abundance of caution many of the States have adopted statutes comparable in their provisions with the Wagner Act, and that in those States it may be immaterial whether the men organize

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PERMISSIBLES

Well, it looks like the theme song has become "Unhappy Days Are Here Again". . . .

It looks like the only effect of our State Department's notes to Japan will be a case of writer's cramp. . . .

A protested ball game being played over again and the special session of Congress have a lot in common . . . both sides are hoping for a different result. . . .

Il Duce wants foreign capital to come into Italy. . . . At that, his 10 percent corporate capital levy would probably look mighty easy to us Americans puzzling over the undistributed corporation earnings tax. . . .

The President and the Vice President both had toothaches on the same day during the special session. . . . Could it be that Congress was causing the pain? . . .

Any day now we expect to hear a new version of the old song: "Trailing, trailing, over the level plain, and many a tax must be repealed e'er we buy a home again." . . .

The Navy is building \$60,000,000 worth of ships. . . . They can't all be for some of those well-known fishing trips. . . .

I have heard no third-term talk at home, declares Mrs. Roosevelt. . . . That may be true, but when, we ask, has Mrs. Roosevelt been home? . . .

Jack Garner, taking one look at a new hat being worn by his wife, snorted: It makes you look like a flapper. . . . That's the kind of a strong man we need in high office. . . .

Alf Landon holds that the New Deal has made the country so dizzy that we are in a tailspin. . . . Alf ought to know. . . . He was on the merry-go-round himself not so long ago. . . .

Congress finds it difficult to speed consideration of legislation which would give the taxpayers relief. . . . But its a shoe on a different foot when it comes to taking money from him. . . . It passed a \$225,000 appropriation bill through both Houses the other day in a few minutes. . . . In the House the vote was 327 to 37; in the Senate—the greatest deliberative body in the world—there was no debate and not a dissenting vote. . . . There's a reason, of course. . . . The money was to pay the legislators for mileage to and from their homes for the Christmas holidays—whether they make the trip or not. . . . At the rate of 20 cents a mile, it's going to be a nice Christmas present from Uncle Sam for those whose bailiwicks are the Far West, Alaska, or Hawaii. . . .

Yes, it's pretty terrible to have Congress in session with all the uncertainty it brings business. . . . But it does mean representative government and nowadays, looking at the rest of the world, that's something. . . .

A congressional friend of ours the other day said there are 12 rules for being a successful politician. . . . Rule one is to pass the buck. . . . The other 11, he added, are relatively unimportant. . . .

Most of the time recently labor has been on strike. . . . More recently capital has become frightened. . . . The results are the same to the average man. . . .

The secret of taming lions, says a famous lion tamer, is to convince the animals you aren't afraid of them. . . . And if the same goes for Congresses, President Roosevelt is now the nation's leading lion tamer. . . .

The Supreme Court has ruled that the jig-saw puzzle is not a game. . . . It's a cinch the justices didn't try to solve one before rendering their decision. . . .

How the special session will go down in history depends largely on whether it decides to pass laws or pass the buck. . . .

You can call it peace with the utilities if you want to, but it looks more like an armed truce. . . .

Messrs. Landon and Hoover make it clear once and for all they would not take the 1940 Republican nomination even if it were offered them. . . . You can hardly blame them . . . after what happened in 1932 and 1936. . . .

This social security business isn't any cinch. . . . Social Security Board had to bring over a Czechoslovakian statistical expert to handle some of the intricate details. . . . He's practicing on us until Czechoslovakia gets its own social security system. . . .

In this period of holiday cheer it is interesting to note that since Uncle Sam preempted the role of Santa Claus, just about \$5,000,000,000 has been spent in "farm relief." . . . And statisticians still wonder why the trend of population is back to the farm. . . .

Well, maybe it's all right to undertake to reform the world. . . . The question, however, is—should we try to make it good or make it like us? . . .

Lights burn far into the night in Justice Black's suburban home outside of Washington nowadays. . . . That ought to be a lesson to other Senators who aspire to the Supreme Court. . . . Who ever heard of a Senator spending the night studying legal tomes. . . .

Congress' Christmas gift to the Nation—a distinguished expense account of \$325,000 for the special session. . . .

Fortieth Annual Meeting of the American Mining Congress



President Howard I. Young presenting loving cup to Secretary-Emeritus
James F. Callbreath

JANUARY, 1938

WITH all important branches of the mining industry well represented, the Fortieth Annual Meeting of the American Mining Congress was held at the Mayflower Hotel, Washington, D. C., December 1-3, 1937. Attendance was increased, and interest was broadened this year by the holding of special conferences of the Coal Operators Committees, the Executive Tax Committee, and the Board of Governors of the Manufacturers Division of the American Mining Congress. An important feature of the business transacted at the convention was the formation of a Coal Division of the American Mining Congress comprising members of the Coal Operators Committees plus other members interested in the coal industry and signifying their desire to be affiliated with this division.

Activities in connection with the meeting were opened on Wednesday, December 1, when the Resolutions Committee met at 10 o'clock. Deliberations of this Committee continued in an afternoon session, and also at a breakfast session on Thursday, December 2.

The Executive Tax Committee, under the chairmanship of Henry B. Fernald, held a business meeting on Wednesday evening, at which important taxation problems pertaining to all branches of the mining industry were discussed. Special attention was devoted to proposals which have been made to repeal or modify the undistributed corporate earnings tax and to modify the law with respect to the treatment of capital gains and losses. The status of the work being done to retain the present provisions of the law relating to depletion also was discussed at some length.

New Coal Division Formed

The opening session of the Coal Operators Committees was held on Thursday, December 2, at 10 o'clock. It was at this session that the Executive Committee of the American Mining Congress recommended the organization of a new Coal Division, the membership to be made up of what are now the Coal Operators Committees, together with an Advisory Council to be appointed by the Board of Directors. W. J. Jenkins, president, The Consolidated Coal Company, of St. Louis, and a member of the Executive Committee, presented the recommendation and the suggested by-laws. Among those who spoke warmly of the value of the Committees' work and in behalf of the formation of a

Coal Division, in addition to Mr. Jenkins, were E. J. Newbaker, vice president, The Berwind-White Coal Mining Company, Windber, Pa.; Eugene McAuliffe, president, The Union Pacific Coal Co., Rock Springs, Wyo., and Omaha, Nebr.; L. E. Young, vice president, Pittsburgh Coal Co., Pittsburgh, Pa.; E. R. Price, general superintendent, Inland Steel Co., Wheelwright, Ky.; K. A. Spencer, vice president, The Pittsburg and Midway Coal Mining Co., Pittsburg, Kans.; C. W. Gibbs, general manager, Harwick Coal and Coke Co., Pittsburgh, Pa.; J. J. Sellers, vice president, Virginia Iron, Coal and Coke Company, Roanoke, Va.; and A. W. Hesse, the Buckeye Coal Co., Nemacolin, Pa.

The by-laws under which the Division is to function were discussed and approved, following which those present voted unanimously in favor of its formation. This action was formally ratified by the Board of Directors at its meeting that afternoon.

The new Division will have a Board of Governors consisting of the chairmen of the several project and district committees, and an Advisory Council composed of coal executives to consult and assist in the prosecution of the work. It was felt that the work of the committees had a very definite value to the coal mining industry, and that a more permanent form of organization would provide additional stimulus and permit even greater accomplishments. The new division will also be of great assistance in developing the annual Coal Conventions and Expositions of the American Mining Congress, held in May of each year.

With Chairman Wm. E. Goodman presiding, the mid-year meeting of the Board of Governors of the Manufacturers Division was held at 10:30 Thursday morning, December 2, at which 12 out of the 14 members of the Board were present. General enthusiasm was shown by all those present in developing plans for the Annual Coal Mining Exposition and Convention to be held at Music Hall, Cincinnati, Ohio, the dates for which were finally set for May 2-6, 1938.

Luncheon Meeting

An important feature of the program was the general luncheon on Thursday noon. With well over 100 members and guests in attendance, President Young first introduced some of the distinguished guests, including Congressman Andrew J. May, of Kentucky; Dr. John W. Finch, Director of the U. S. Bureau of Mines; Dr. W.

C. Mendenhall, Director of the U. S. Geological Survey; John D. Battle, Executive Secretary of the National Coal Association; and Russell Brown, General Counsel of the Independent Petroleum Producers Association.

By a happy coincidence, the day when the principal activities of the meeting were held, December 2, was also the birthday of James F. Callbreath, Secretary-Emeritus of the American Mining Congress. Between courses at the luncheon the lights of the room were lowered, and a birthday cake was brought in and placed in front of Mr. Callbreath, as those present wished him a happy birthday in song.

Following the introduction of guests, President Young, on behalf of the Mining Congress, presented Mr. Callbreath with a silver loving cup, and prefaced the presentation with the following remarks:

"I think it is rather unusual that we should be gathered together here today at our Fortieth Annual Meeting, and at the same time on the birthday of the man who was responsible for the original organizing of the American Mining Congress, and who has given unselfishly of his time and efforts to the best interests of the mining industry during those 40 years. I want at this time to present to you, Mr. Callbreath, this silver loving cup, in loving appreciation of the members of the American Mining Congress for

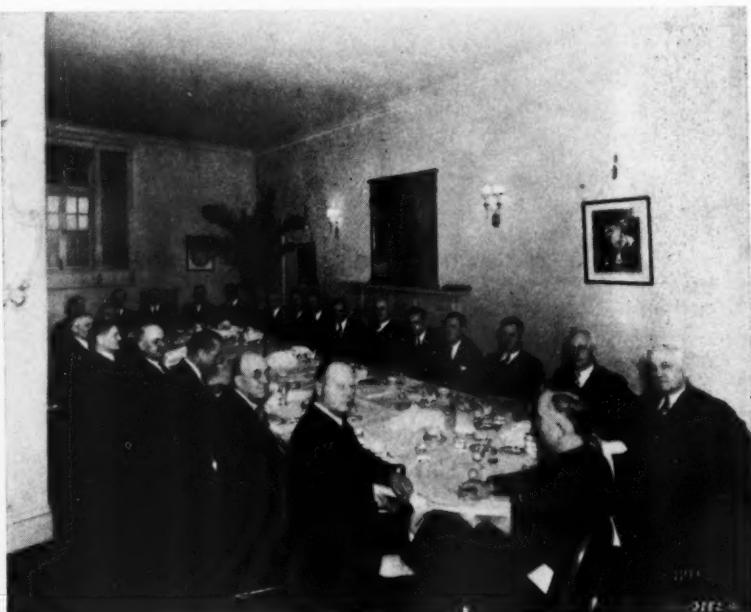
the constructive efforts that you have put forth for a number of years in building the organization that we have today, which is of great value to all branches of the mining industry.

"At the same time I want to congratulate you on this, your birthday, and I hope you may have many years of happiness and be with us for many years to come."

In a most appropriate response Mr. Callbreath said in part:

"I am not ashamed to be greatly affected by this special token of your friendship. I appreciate it more than I can tell you. I felt that after the very delightful compliments that were given me at the Denver meeting, and after the special courtesies at the Salt Lake meeting, and the very kindly consideration at the Cincinnati meeting, I had already received many, many times more credit than I was entitled to, and this comes to me with peculiar meaning." . . .

"I am very proud of the American Mining Congress. I am proud of the fact that you gentlemen, leaders throughout the nation, have taken hold and made the small part that I could play in such a movement grow into an organization which stands as the representative of the most important industry in the world. It needs your help, it needs your brain power, it needs your energy and your cooperation to keep the mining industry on its feet, and incidentally to keep the



Breakfast meeting of the Resolutions Committee

nation out of the slough of despond of which there are ominous signs now in the offing.

"I wish it were possible for me and if you had the time I would like to talk to you considerably along this line, but I am sure it is no place for me to do so. I do believe that you gentlemen of the American Mining Congress, officered as it is with capable men at the helm, will continue to make of the American Mining Congress an interest and an influence which will make for the best interests of the nation as a whole, as well as that industry which you particularly represent.

"Again let me thank you from the bottom of my heart for this token of your kindness and your appreciation. I thank you."

President Young then introduced the guest speaker at the meeting, the Honorable Wesley E. Disney, Congressman from Oklahoma, who addressed the group on the very timely and all-important subject, "Revision of the Revenue Laws." Congressman Disney's address was of particular interest, inasmuch as he is a member of the Subcommittee of the Ways and Means Committee that is now engaged in a careful study with a view to revising the present tax laws.

Congressman Disney outlined in considerable detail the complexities of the task facing the subcommittee, indicated the impossibility of obtaining a new law during the present special session, outlined many of the revisions being considered and spent considerable time in pointing out the seriousness of the threatened change in the provisions of the present law dealing with percentage depletion. Congressman Disney's address is carried in full on pages 56-57 of this issue.

Following the luncheon the business session for members was held, at which four members of the Board of Directors were elected as follows: Howard I. Young, president, The American Zinc, Lead and Smelting Co.; James R. Robbins, vice president, Anaconda Copper Mining Co.; Merrill E. Shoup, The Golden Cycle Corporation, Colorado Springs, Colo.; and Wm. E. Goodman, president, Goodman Manufacturing Company, and chairman of the Manufacturers Division of The American Mining Congress. Retiring directors were: Eugene McAuliffe, president, The Union Pacific Coal Company; and Donald E. Gillies, vice president, Republic Steel Corporation.

Reports were presented by Erle V. Daveier, chairman of the Finance Committee; Henry B. Fernald, chair-

man of the Executive Tax Committee; Herbert W. Smith, chairman of the Social Security Committee; and by Secretary Julian D. Conover.

Secretary's Report

Mr. Conover, in outlining the many services that have been performed by the American Mining Congress on behalf of the mining industry during the past year, said in part:

"In this fortieth year of its existence the American Mining Congress has continued to serve the mining industry in all its branches. There has been a gratifying increase in membership and in the willingness, on the part of all elements in this great industry, to cooperate for the general welfare. Realizing the need of unified action in the many problems which are common to all minerals, producers of bituminous and anthracite coal, of lead and zinc, of iron ore, of copper, silver, gold and other metals and non-metals, are coming, to a constantly increasing extent, to look upon the American Mining Congress as the medium through which these problems may best be coordinated and handled.

"Our organization is here to serve the entire mining industry, to present its needs and to defend it when necessary, before the legislative and administrative bodies of our National Government. Such concerted effort is particularly effective in view of the widespread character of mining and its basic importance to our whole industrial fabric. As an important industry in more than three-fourths of the States of this country, and a dominant industry in many of these, particularly in the Rocky Mountain West, mining should properly receive sympathetic consideration, fair treatment and encouragement at the hands of our national law makers and Federal departments—but in order to attain this end the industry must be vocal. Its national organization and those which represent particular branches of the industry, its local, State and regional associations, and its individual members must make known their views—and particularly must this be done by the small operators, who over the years are largely responsible for the development and continuation of our industry.

"The coordination of these views, the bringing of the facts concerning the whole industry into focus for the information and assistance of our public officials, is the function of the American Mining Congress, and it succeeds in its endeavors in proportion

as all branches and all members of the industry in all parts of the country do their part." . . .

"Operating Problems

"Before discussing our Washington activities in detail, we wish to refer to another extremely important phase of our work, which involves the study of improved mining practices and of operating problems. Thus, our Coal Division through its national and district committees comprising some 300 prominent operating officials in all fields, is gathering data and compiling reports on all phases of modern mine operation. Its work is a real factor in the progress of mechanization and the attainment of lower costs, greater safety, and a better product. Cooperating in this movement are the leading manufacturers of mining equipment as represented in our Manufacturers Division. The manufacturer, in the eyes of the American Mining Congress, is an integral part of the mining industry without whom the present state of advancement in the production of metals and fuels could never have been reached, and whose cooperation is essential to the further progress of our industry. We particularly welcome the representatives of this branch of the mining fraternity at these meetings and their counsel in our deliberations."

After giving a short account of the conventions and expositions held during 1937, Mr. Conover briefly reviewed important legislative problems that have concerned the mining industry during the past year, excerpts from which are as follows:

"Undistributed Earnings Tax

"The tax on undistributed corporate earnings contained in the Revenue Law of 1936 was enacted over the vigorous protests of the American Mining Congress. When it became evident that a tax embodying this principle was inevitable, modifications were sought by members of the Senate, particularly from the western mining States, to incorporate amendments which we had suggested. These included exemptions from the tax for retirement of debt and expansion of plant facilities (including development of mines), recognition of the special problems in the treatment of inventories, and provisions to avoid penalties in cases where the Commissioner later determines that additional net income exists over that determined by the taxpayer; also to permit peri-

odic redeclarations of value for purposes of capital stock and excess profits taxes. Although these amendments were not accepted due to fear that they might decrease the expected revenue, the ground work was laid for remedial action at a later date.

"A definite accomplishment as the direct result of our work at that time was the liberalization of the law relating to tax-free liquidation of subsidiary corporations—a provision which had been incorporated in the 1935 Act by reason of presentations made by the American Mining Congress. This is of special value in view of the elimination, in 1934, of consolidated returns, and the imposition, in 1935, of a tax on intercorporate dividends.

"The harmful effects upon mining enterprises, as well as other lines of industry, which were pointed out when the undistributed earnings tax was under consideration, have fully materialized, and our organization has continued to urge its repeal or substantial modification. Protests from industry as a whole have registered so strongly that amendment now appears imminent. The Subcommittee which is studying this matter, as explained by Mr. Disney today, has already reached agreement on a far-reaching change which will greatly reduce the impact of this tax. Under this agreement the entire principle of a tax based on failure to distribute income would be abandoned in the case of corporations earning \$25,000 or less. As to those earning more than \$25,000, the penalty for failure to distribute would be reduced from over 20 percent to a maximum of only 4 percent; the mechanics of this change being accomplished through assessment of a 20 percent "normal" rate with a credit of 4/10 of 1 percent for each 10 percent of the net income which is distributed as dividends. Along with this, a revision of the tax on capital gains, to minimize the 'heads I win, tails you lose' effect of existing law and encourage investment in productive enterprise, has been agreed to.

"These changes, action on which is being stimulated by the present critical recession in business, are a gratifying reflection of the principles for which we have been fighting.

"Depletion

"The recommendation made by the Secretary of the Treasury, and re-peated by the President in his message to Congress last June, to abolish the percentage depletion provisions of the existing law, was, in its substance and

its implications, a matter of the utmost importance to the entire mining industry. Since this recommendation was combined with a discussion of 'tax evasion' it was necessary to present the situation fully to those having the bill under consideration, to the end that the well established principles of depletion, which had previously been the subject of thorough and repeated deliberation by Congress, should not be treated hastily in any so-called 'loop-hole closing' legislation. Fortunately the committee considering the Revenue Act of 1937 concluded that percentage depletion was too complex a subject to be treated in the short time available.

"A special brochure, meeting the challenge of the Secretary of the Treasury summarizing the position of the mining industry and showing the propriety of the existing depletion provisions, has been widely distributed, and the facts which it contains have been forcefully used by members of the industry throughout the country in presenting the matter to their congressional delegations. This booklet has received an extremely favorable response, and its merits have been further attested by the decision of the petroleum producers to prepare a similar statement, in which they have requested permission to incorporate verbatim a portion of our statement.

"A more complete presentation of the entire subject of depletion is also in course of preparation, and every possible effort will be made to maintain the very proper provisions of the existing law.

"It is now evident that enactment of a revenue law will go over to the regular session in January. The fact that possible decreases in revenue, resulting from revision of tax rates, will intensify the search for new sources, makes it all the more important that adequate defense of the present depletion provisions be made.

"There are many other phases of our tax work, in connection with both the enactment and interpretation of the revenue laws, which might be discussed at length. In this work we are fortunate to have the leadership and guidance of the chairman of our Executive Tax Committee, Mr. Henry B. Fernald, and of our General Counsel, Mr. Ellsworth C. Alvord, whose broad experience and knowledge of this subject are of inestimable value.

"Other legislation which is of special importance to mining includes the following wide variety of subjects:

Stream Pollution
Wages and Hours

Labor Relations
Anti-Trust Law Revision
Anti-Basing Point Measures
Foreign Trade Agreements
'Regional Conservation'
Silicosis
Social Security
Securities and Exchange Act."

A brief statement followed concerning each of these matters and their present status.

The report of the Resolutions Committee carried in full on pp. 56-57, was then presented by its chairman, Donald A. Callahan, and was adopted unanimously.

The Board of Directors of the American Mining Congress then convened for a short executive session, at which all officers for the past year were reelected. These include Howard I. Young, President; David D. Moffat, Edward B. Greene and Donald A. Callahan, Vice Presidents, and Julian D. Conover, Secretary.

Buffet Supper

That evening an informal buffet supper was given to all members in attendance, together with a large number of guests, comprising Senators and Congressmen, and many members of various Government departments. The ladies were included in the party, and a most pleasant evening of dancing was enjoyed by all.

Among the distinguished guests in attendance with their wives were: Senators Alva B. Adams, Henry F. Ashurst, Arthur Capper, Edwin C. Johnson, William H. King, James E. Murray, James P. Pope, H. H. Schwartz, Elbert D. Thomas, and Elmer Thomas; Congressmen Wesley E. Disney, Richard M. Duncan, Charles I. Faddis, Frank C. Kniffin, Andrew J. May, James M. Scrugham, Chester Thompson, and Compton I. White; Mrs. Nellie Tayloe Ross, Director of the Mint; Mrs. Emily Newell Blair; Under Secretary of the Interior Charles West, and Dr. John W. Finch, Director, U. S. Bureau of Mines.

Coal Division Meetings

The Committees of the Coal Division held meetings throughout the day on Thursday, December 2, and a general conference on Friday, December 3, at which reports of the several Project Committees were presented in detail and acted upon. Members of the Manufacturers Division were well represented at these meetings and were active participants in the discussions.

One of the principal functions of the Coal Division is to conduct research into mining methods, systems

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and practices, with a view to determining the most improved and efficient ways of meeting various mining conditions that are encountered in the different fields. Coal mines of the United States are engaged in a widespread program of modernization. Methods and equipment which have been in use for a number of years are giving place to a more advanced and a more scientific procedure. This results in better working conditions underground, and the elimination of much of the hardship and drudgery that formerly existed. Through the adoption of modernization, coal mining is fast becoming a more attractive employment under safer conditions and more desirable surroundings.

Discussions at the conferences centered around the work of the various Coal Division Committees, including those on Haulage Roads, Surface Preparation, Underground Power, Conveyor Mining, Safety, Mining Systems, and Mechanical Loading.

The Committee on Haulage Roads has made a series of reports on the best methods of track construction. In modern operation the underground haulage system of a coal mine is comparable to railroad operation and the construction of the track and road bed is fast approaching railroad specifications. This committee is under the chairman of R. V. Clay, general manager, Hanna Coal Company, St. Clairsville, Ohio.

The Committee on Surface Preparation is studying and reporting the most advanced methods that have been

developed for screening, cleaning and otherwise preparing coal that is dustless and free from impurities. This Committee is under the chairmanship of T. W. Guy, consulting engineer, Charleston, W. Va.

The Committee on Underground Power completed about a year ago their report on distribution lines for direct current in coal mining which has been published in pamphlet form. As a continuation of this study the Committee, under the chairmanship of C. C. Ballard, selected for their next subjects "Trolley Construction in Mines" and "High Voltage Power Cables Inside Coal Mines."

The Committee on Conveyor Mining is reporting on the different methods used underground where conveyors are installed for loading and assembling the coal from a number of working places to one common loading point. This Committee is under the chairmanship of T. F. McCarthy, general manager, The Clearfield Bituminous Coal Corporation, Indiana, Pa.

The Committee on Safety is compiling a set of standard and basic fundamental rules for safety in mining. These rules are designed to serve as a guide for companies in making up their individual regulations covering safe operating practices. This Committee is under the chairmanship of J. J. Sellers, vice president, Virginia Iron, Coal and Coke Company, Roanoke, Va.

The Committee on Mining Systems has completed a series of reports showing typical methods for mining and

extracting pillars as developed for varying seam conditions and depths of cover. The next study which is now being started is to show systems that are in use with underground conveyors. This Committee is under the chairmanship of Frank G. Smith, general manager, Sunday Creek Coal Company, Nelsonville, Ohio.

A Committee on Mechanical Loading is being organized under the chairmanship of Newell G. Alford, Consulting Engineer of the firm of Eavenson, Alford and Auchmuty, Pittsburgh, Pa. This Committee will start a study of methods and practices for mobile loading machines, which is one of the most important phases of mining today, and this study will serve as a valuable guide in this development.

The Committees which now form the Coal Division have been organized for about two years and the work which they have already done has become recognized by the industry as containing definite and authoritative information of great practical value. The data and descriptions which these reports contain are not available from any other source and the Committees are fulfilling a need that has long been felt by the men who are engaged in mining coal.

As the meetings came to a close on Friday afternoon, it was the consensus of all present that the Fortieth Annual Meeting of the American Mining Congress had been, from the standpoint of attendance, of interest and of accomplishments, one of the best ever held in its entire history.



A Declaration of Policy

The American Mining Congress assembled in Annual Convention at Washington, D. C., December 2, 1937, commends the words of the Secretary of the Treasury in his address of November 10, 1937, when he said:

"The basic need today is to foster the full application of the driving force of private capital. We want to see capital go into the productive channels of private industry. We want to see private business expand."

These words are timely, as the country finds itself once more in a serious business recession.

Private industry can be expanded only through increased production of wealth. Wealth can be distributed only after it is produced. Nothing can take the place of expanded production. This is of vital importance to the workman, if he is to have a steady job; to the employer, if he is to meet expenses and earn a profit; to capital, if it is to be put to productive use, and to the Government for necessary revenue.

We believe that, if business is to go forward, Congress, with a full sense of its responsibility and power, should refrain from restrictive legislation. Confidence is the foundation of economic stability. If confidence is to be restored, we must return to Government characterized by a determination to economize, opposed to the further growth of bureaucracy, and dedicated to the repeal of punitive and unsound legislation, the effect of which has been to hamper business growth and retard initiative.

To that end we present the following declarations on subjects of public policy:

Taxation

The current decline in business activity accompanied by an alarming increase in unemployment must be checked and confidence must be restored. Action now to this end is imperative. We urge the immediate repeal of the undistributed profits tax and a substantial modification of the provisions of the present tax law relating to capital gains and losses.

We endorse and approve the Declaration of Policy with respect to taxation, adopted by the Western Division of the American Mining Congress at its Annual Convention at Salt Lake City, September 10, 1937, and the often expressed policies of the American Mining Congress, which may be summarized in part as follows:

(1) The budget of the Federal Government should be balanced by the elimination of excessive and unnecessary expenditures.

(2) The taxing power should be exercised only to raise revenue for the necessary expenses of the Government—not to redistribute wealth, nor to force social reforms, nor to bring about the control of industry by the Government.

(3) Many of the present rates of taxation are unduly high and beyond the point of maximum productivity.

(4) The flat-rate tax upon corporate income should be re-established; taxable income should be computed upon the basis of consolidated returns; the tax on dividends received by corporations should be removed; business losses of one year should be carried forward and deducted from future income; the deduction of capital losses should be allowed without limitation; taxable income should conform more nearly to true income computed in accordance with accepted accounting practices; and the capital stock tax should be repealed at the earliest possible date, and until repealed an annual declaration of value should be granted.

(5) The undistributed profits tax retards the development of worthwhile mining properties, imposes unfair and excessive burdens upon mining corporations, and discourages sound business pro-

grams which would create substantial opportunities for increased employment.

(6) In the administration of our tax laws, there should be not merely a zeal for the collection of revenues but due respect for the rights of taxpayers and decisions of the courts and the Board of Tax Appeals.

(7) The Board of Tax Appeals should be continued as an independent, impartial, non-political agency for the judicial determination of disputes between taxpayers and their Government.

(8) The provisions of the present law with respect to depletion are the result of years of study and experience. They are fair and equitable; they permit of substantial savings in expense to both the Government and the taxpayer; they protect the small operator against discrimination and the taxation of his capital; they return no more to the industry than its annual consumption of capital; and they constitute the best procedure yet devised for recognition of the capital continuously invested in an industry necessary to the welfare of the nation.

Government in Business and Production

We believe that business and production are not primary functions of Government.

We deplore the engagement of Government in business and production in competition with its citizens, and urge its retirement as rapidly as possible from all such enterprises in which it now is engaged.

We oppose all legislation designed to expand such activities of Government.

Federal Reserves for Unemployment and Old Age

The mining industry views with concern the economic and social hazards involved in the ultimate accrual of a huge reserve fund under the existing provisions of the Social Security Act.

We maintain that Federal fiscal policy authorizing use of income from social security taxes for current governmental expenses not associated with administration of the Act is unsound. The Govern-

ment's obligation to the reserve fund thereby is increased without any compensating reduction in the general public debt.

We heartily concur with repeated official suggestions that changes in the Act in this respect may be advisable. It is desirable that a further study of this important question be made by the Congress to the end that these obvious hazards be eliminated by corrective legislation.

Money

We favor a currency with a metallic base in preference to a so-called managed currency, and we favor the employment of both gold and silver in our monetary system. We approve and favor the continuance of governmental purchases of newly-mined domestic gold and silver to provide an adequate metallic base for our currency.

Securities and Exchange Commission

The mining industry provides employment and markets to great numbers of people. It furnishes materials necessary to civilization and to the national defense.

Exploration and new development are vital to the perpetuation of the mining industry. These essential functions are now impaired by excessive expense of conforming with regulations of the Securities and Exchange Commission, by frequent administrative delays, and by an apparent bias against speculative enterprises.

We urge simplification of requirements and acceleration of administration. Because all available knowledge and technique have not been able to divorce risk from new mineral development, we oppose the suppression of speculative issues. We approve all efforts to prevent dishonesty, but realize that the amount of regulation necessary to protect all investors from their own lack of good judgment would stifle much legitimate mineral development.

Reciprocal Trade Agreements

We endorse efforts to increase our international trade and recognize the necessity of such increase if we are to continue to be a prosperous nation. Changes of tariff rates in any future trade agreements to be negotiated with foreign countries should be made only on the basis that they do not sacrifice any basic American industry for the benefit of any foreign country. Tariff rates should not be reduced if the effect will be to subject American products to unfair competition with underpaid foreign labor, or to competition with materials produced under subsidies by foreign governments. Such competition impairs the mineral industry and inevitably reduces the standard of living of American workers.

We commend the practice of the State Department in giving advance information concerning the products to be considered in reciprocal trade agreements; we urge that there should be full public hearings called upon due notice and that agreements should become effective only after specific approval by the Senate.

Labor

The interests of the consuming public, of employees, employers, and of capital, are mutual and

can be served best through the fullest measure of mutual cooperation.

The Wagner Labor Relations Act, without question, has demonstrated its unworkable character and its impracticability as a means to this end. When agreements are arrived at under the Act, the Act compels their observance by the employers; on the other hand, irresponsible labor elements are free to violate them and have repeatedly ignored such agreements. As the Act carries no provision for the impartial enforcement of mutually-arrived-at agreements, the principles underlying sound labor relations are all too frequently flouted. That this legislation has failed to serve the cause of labor is well evidenced further by the continuous inter-union warfare that has been carried on for months, with resultant loss of life, property and employment.

Employers and organizations of employees should be subject alike to legal responsibility for their conduct and that of their agents. Employees should be free from coercion from all sources. The establishment of wage levels by legislation or fiat of governmental authority is contrary to sound economic principle.

We protest the sit-down strike as subversive in character and inimical to the public welfare. For the same reasons, we deplore the assumption of leadership of American labor by aliens.

Roads

We urge that where public funds are to be used for the construction of public highways, the benefits be extended, wherever feasible, to the construction of roads of practical benefit to the mining industry.

Water Pollution

We believe in maintaining, insofar as is feasible, the wholesomeness of the natural waters of our country, and our industry is making every effort to that end. However, it is impossible in many instances to conduct the industrial functions of a region and at the same time maintain the wholesomeness of its natural waters. A sound solution of this problem must take into account local conditions which vary greatly from place to place.

We oppose legislation which would effect Federal regulation and control of the pollution of such waters. We believe that this is primarily a matter for state regulation, assisted where necessary by interstate compacts. We specifically oppose the regulatory provisions of the bill now pending in the Joint Conference Committee of the Senate and House of Representatives.

Public Domain

We endorse and approve the system of locating mining claims and of granting patents. This system is well founded both in practice and in law, and for the future development of our country should be continued without change.

We deplore governmental prohibition of the development of valuable mineral areas in the National Game Preserves and needless restrictions to such development on other public lands. We disapprove the withdrawal of public lands from mineral entry.



WHEELS of Government

WHILE the special session, convened November 15, may have served to some extent to clarify issues and to prepare for the second session of the 75th Congress which opens January 3, 1938, there is practically no record of accomplishment.

For three weeks the Senate aired its differences over the much debated anti-lynching bill; while the House confined its activities to early adjournments, pending the reporting of the Farm Bill. The administration program, indicated informally at the close of the first session in August and given to the special session in the President's opening message, moved very slowly. It will be remembered that the President called for

- (1) Agricultural relief
- (2) Labor legislation
- (3) Government reorganization
- (4) Regional planning

Finally, the House Committee on Agriculture reported a farm relief bill and the House went to work. This measure has now passed both the House and Senate but the versions adopted by these two bodies vary widely and it is extremely doubtful that the Conference Committee can report an agreed bill before the second session convenes.

Early in the fifth week of the special session, the newspapers carried a statement of policy prepared by a coalition of Senators, with the purpose of placing before the nation a program which would serve as a basis for legislative and national action in these uncertain times. The statement is non-partisan and patriotic, and a most interesting thing about it is the similarity which it bears to the Declarations of Policy which the members of the American Mining Congress have enunciated for the past two years and most recently on December 2, 1937.

The fifth week of the session witnessed the most hectic and tangled legislative situation which has developed in many years, when the proponents of the Black-Connery Wage-Hour Bill were successful in their efforts to discharge the Committee on

Rules from consideration of the bill, and to bring it out to the floor of the House for action. It was a most peculiar situation as there were few members of the House who really wanted the bill. Opposition of the industrial south was frank and direct while labor, after attempting to replace the Black-Connery measure with its own substitute, turned thumbs down and scuttled the ship. Thus the second item of the administration program died.

The Government reorganization and regional planning measure, while subject to discussion in committees and with regional planning considered in intermittent hearings before the Committee on Rivers and Harbors, did not receive any wholehearted consideration toward enactment. The subject of Government reorganization is more controversial than is generally realized. If and when the matter is pressed by the administration, it will precipitate a state of legislative warfare which its proponents may do well to consider seriously before undertaking.

Taxation

With his place on the bench of the District of Columbia Court of Appeals secure, Chairman Fred Vinson, Kentuckian, who heads the Ways and Means Subcommittee in charge of the revision of the Revenue Laws, has continued to labor tirelessly with his able assistants to prepare a report and a draft of a bill for submission to the full committee early in January, 1938.

The subcommittee has agreed on a change in the provisions of the tax on undistributed corporate earnings which also embodies an alteration in the normal tax rates. Under this plan corporations having a net income of \$25,000 or less will simply pay a flat tax of 12½ percent on the first \$5,000 of

net income and 14 percent on the remaining \$20,000, with no undistributed earnings levy involved. For corporations with incomes of more than \$25,000 the normal rate will be 20 percent, which can be reduced to 16 percent if the corporation distributes all of its net income in dividends. From the 20 percent corporation rate, there will be allowed a reduction of 4/10 of 1 percent for each 10 percent of net income distributed as dividends. This method really means a penalty of 4 percent of net income if earnings are completely retained, as compared with a surtax on undistributed earnings of from 7 to 27 percent in the 1936 Revenue Act. Chairman Vinson stated that a normal corporate rate of 22½ percent would have been necessary to compensate the revenue yield if the Committee had elected to repeal completely the undistributed earnings tax and also the application of the normal tax on dividends paid to individual taxpayers.

Another interesting action of the Committee was its agreement on a proposal to permit the Commissioner of Internal Revenue to make declaratory decisions upon inquiries submitted by the taxpayer. Such advance decisions would be binding upon the Bureau, but not necessarily upon the taxpayer. At the present time the Bureau may reverse itself upon informal opinions which it has given to a taxpayer. Under the agreed provisions, if a taxpayer acts upon a declaratory decision the Bureau may not reverse its stand, but the taxpayer is free not to follow such a declaratory decision and to appeal if he feels that it is unjust.

In the course of the deliberations of the Ways and Means Subcommittee, mineral taxpayers have been deeply concerned because of the recommendation of the Secretary of the Treas-

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ury made public in the President's message of June 1, 1937, that percentage depletion be eliminated from the law. It is believed that in the consideration of the depletion provisions the Subcommittee has had reference to the legislative history of percentage depletion. As is well known, this began with the approval of the Congress in the Revenue Act of 1913. The Revenue Acts of 1926, 1928, 1932, 1934, 1935, 1936 and 1937 have all registered the approval of Congress of this simple, just and proper method of arriving at the amount of deduction which should be taken for the wasting mineral asset. It is now felt that the Subcommittee in reporting to the full Committee will not recommend any change in this provision of the law, thereby recognizing the wisdom and the labors of the committees of both the House and Senate in the past, and the exhaustive studies made in arriving at their carefully considered decisions.

Wage-Hour

At 9:15 p. m., Friday, December 17, the Black-Connery Wage-Hour Bill as rewritten by the House Committee on Labor was recommitted from the floor of the House of Representatives by a vote of 216 to 198. The bill was heavily loaded with amendments and was thoroughly unworkable; it could not have been administered. The rewritten bill provided for a Wage-Hour Division in the Department of Labor under a single administrator and for wage-hour committees to be appointed by the administrator for any industries in which he had reason to believe "oppressive labor conditions" existed. Labor standards aimed at in the bill included a minimum wage of 40 cents per hour and maximum hours of 40 per week. In recommending minimum wages, committees were to consider

- (1) Cost of living.
- (2) Wages paid by employers who voluntarily maintain reasonable minimum.
- (3) Wages established by collective bargaining.
- (4) Local economic conditions.
- (5) Relative costs of transporting goods to market.
- (6) Reasonable value of services rendered.
- (7) Differences in unit production costs occasioned by varying local natural resources, operating conditions and other factors.

In recommending a maximum work day and maximum work week, the committees were to consider

(1) Hours of employment observed by employers who voluntarily maintain a "reasonable maximum work day and work week."

(2) Hours of employment established in similar occupations through collective bargaining.

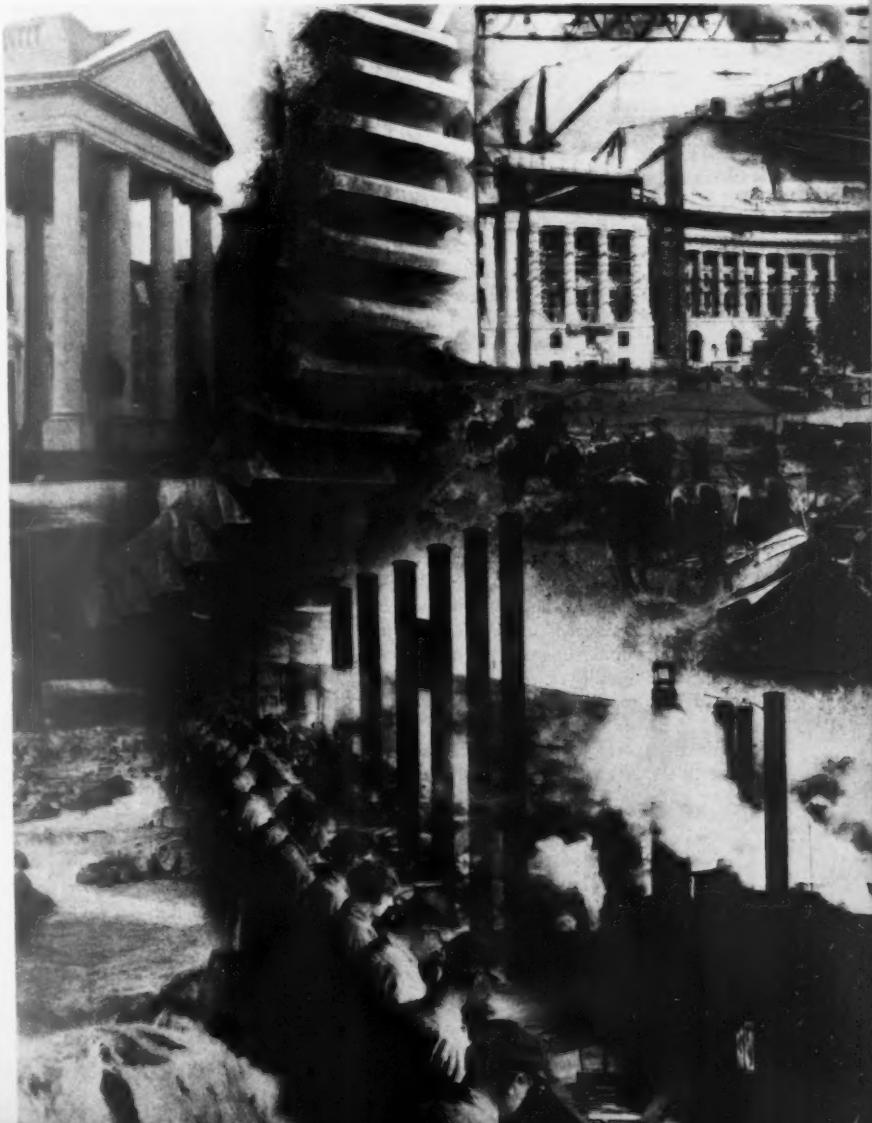
(3) The number of persons seeking employment in the occupation or industry.

The stated objective of the act was to raise existing wages in the lower wage groups so as to attain as rapidly as practicable a minimum wage of 40 cents per hour "without curtailing opportunities for employment and without disturbance and dislocation of business and industry," and a maximum work week of 40 hours "without curtailing earning power and without reducing production." The bill directed the administrator to hold public hearings but gave him (or her) wide powers to reject committee

recommendations and to put orders into effect.

When the bill was brought out on the floor of the House on Monday, December 13, by a petition which discharged the Committee on Rules, it made the fifth week of the special session one long to be remembered. Consent was given to six hours of debate, after which the bill was subject to amendments with the Labor Committee offering and securing an affirmative vote on its rewritten measure. Following this the Dockweiler-American Federation of Labor statutory form of 40 cents-40 hour bill was offered and voted down. Next came the Lamneck Bill, which would have placed administration of the act under the Federal Trade Commission. It was voted down. The Committee made good on its promise to eliminate the "grave-yard shift" provision by floor amendment, but very soon there-

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after Representative Bulwinkle of North Carolina, striking at the textile industries, offered an amendment to the definition of a "substandard labor condition," to make it include a condition of employment under which,—

"(D) Minors are employed between the hours of midnight and 6:00 a. m.; or (E) any employe is employed in the operation of productive machinery between the hours of midnight and 6:00 a. m. in any manufacturing industry which the administrator may find and by order declares does not require continuous operation, unless such employe is paid at rate of not less than one and one-half times the rate otherwise payable. . . ."

The House adopted this amendment and in the course of debate immediately thereafter the record shows the following:

"Mr. Murdock of Arizona: Would the gentleman's amendment apply to smelters?

"Mr. Bulwinkle: Does that require continuous operation?

"Mr. Murdock of Arizona: It does.

"Mr. Bulwinkle: Then it does not apply to them.

"Mr. Murdock of Arizona: *Nor in mining operations?*

"Mr. Bulwinkle: *No.*"

This is a worthwhile record for the future and sets forth beyond question that the wording of the above amendment would not apply to mining or smelting. Nevertheless the western Congressmen were not completely satisfied, and at their request, Representative Ramspeck of Georgia, ranking member of the House Labor Committee, secured the acceptance of a further amendment which specifically exempted mining, milling and smelting from Representative Bulwinkle's amendment.

As to the future of this type of legislation, there is no question but that further wage-hour bills will be introduced. There is now talk of a type of resolution which would declare the 40 cent wage-40 hour week to be the desired objective which Congress would suggest that management and employees should attain as rapidly as may be economically feasible. The fact remains that direct Federal control of wages and hours is not likely of enactment this winter.

Stream Pollution

The situation of the Vinson Water Pollution Bill (H. R. 2711) remains little changed. There has been no move toward a renewal of the meetings of the conferees of the House and Senate

who disagreed on this measure at the end of the first session last August. Those interested in the advancement of constructive work on stream pollution recognize that a mandatory Federal control type of bill, such as would be created by the Lonergan amendments, is not the proper approach to the objective. The Bureau of Mines, the Geological Survey, the Bureau of Public Health, the Corps of Engineers, and other Federal agencies have done much to assist industry, states and municipalities in the work which has been and is being accomplished, and this is the manner in which the original form of the Vinson Bill, as prepared by the House last session, would treat the problem. Through such a measure wholehearted cooperation would be assured, and all parties at interest would work cheerfully to the desired end.

Anti-Trust

Other than the O'Mahoney-Borah Federal Licensing Bill and the Wheeler Anti-Basing Point measure, there has been no new legislation introduced which would purport to regulate business enterprise under so-called "anti-trust" provisions. It is known that Assistant Attorney General Robert Jackson has been working on some form of action, and it was announced that such a program was the subject of discussion on the President's recent Florida fishing trip. It is the general opinion that administration action on this phase of legislation awaits the outcome of the action which is now being prosecuted against the cement producers.

Regional Planning

The Mansfield Regional Conservation Act of 1937 has been the subject of intermittent hearings during the last weeks of the special session. The committee is reported to be drafting a revised bill as the outcome of "olive branch" procedures by the administration and the public utilities, which were directed toward stimulating construction expenditures on the part of private enterprise. It is reported that the draft of the revised Regional Planning Bill will omit hydroelectric development features except for the Columbia River basin, where the Bonneville and Grand Coulee projects are already so far advanced. The Committee on Rivers and Harbors has felt from the beginning that the work long under the charge of army engineers should not be disturbed, and that reclamation and

irrigation should remain in the Department of Interior, with reforestation and soil erosion work continuing under the Department of Agriculture. The coming draft of the bill is understood to contemplate a series of planning boards to coordinate the plans of the various flood control, reforestation, soil erosion and reclamation agencies in connection with the work of the National Resources Committee.

Bituminous Coal Commission

The Commission made its minimum price standards officially effective on December 16 amid considerable protest from interested producers of bituminous coal. There were some instances of change in railroad fuel prices, as set by the Commission, and numerous hearings have been arranged to consider petitions on proposed price changes affecting the domestic and industrial consumers. In general, intra-state production has been classified as affecting the flow of coal in interstate commerce so that up to the present time the Commission is in control of all production. The picture is an extremely interesting one, and it is known that the British producers have sent representatives to this country to observe the details and results attending the early administrative efforts of the United States Commission. The British have had their Coal Act for eight years, and while nearly every British producer will criticize its operation and need of amendment, he seems to believe that the movement is for the ultimate benefit of the nation.

Freight Rates

The railroads' petition for a 15 percent increase in freight rates which was made early in December was not granted by the Interstate Commerce Commission. It is reported that in view of a situation which is known to be serious the Commission is considering a flat 10 percent grant. The Reconstruction Finance Corporation, well versed in the financial status of the carriers, has espoused the cause of the railroads through its chairman, Jesse Jones. A statement by the President approves the continuation of private ownership and infers that help is needed, but contains the intimation that a partial solution is to be found through consolidation of competing railroads. The National Bituminous Coal Commission has spoken out sharply against any further increases in rates on bituminous coal, and the railroad rate problems of the anthra-

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Pocahontas Progress in 1937

(Continued from page 20)

has been the coal industry's chief if not its only deficiency.

General Feeling Hopeful

Summarizing, the year just closing has presented many appearances of "the darkest hour before the dawn," but there does seem to be a better year in prospect. Regardless of whether governmental regulation is permanent or even successful, there is the feeling abroad here that there is assured a profit on the production certain under the law, and with even a small margin the operators are confident they can make substantial progress with consistent marketing policies and plans which they have heretofore not been able to afford.

The Wagner Act

(Continued from page 49)

under the provisions of the National or of the State law.

It is hardly conceivable that a large smelting company, drawing its ores from many States, reducing them and shipping the bullion in interstate commerce for refinement, would not come within the provisions of the Wagner Act. On the other hand, it is entirely within the logic of the statute that a mine within a State, taking its ore from the ground, shipping intrastate to the smelter and being there paid for its product, would be held to be so far removed from the stream of interstate commerce as to free it from the provisions of the Wagner Act.

It will be indeed fortunate if the experimentation involved in the application of the legislation under discussion can be carried out without casting upon all of the component parts of our productive units burdens which will render them helpless in a competitive world. We may build Utopias and theorize ourselves into a condition of security, but when the final assay is taken the immutable law that men must work or men must want will not have been repealed.

If the time shall come when we have so arranged our own household that the copper of the world, the lead of the world, and the zinc of the world come from without the boundaries of the United States, then the problem of negotiation between the miner and the operator will have vanished.

Mining Department Recast

The School of Mineral Industries of the Pennsylvania State College is in process of reorganizing the Department of Mining Engineering with a view to meeting the future needs of Pennsylvania. Under the new plan the work of the department will be carried under three general classifications; mineral production, safety and health, and mineral preparation.

The primary function of the department is undergraduate instruction but this is only part of the work. Other important divisions of service of the school are extension, correspondence instruction and research. Members of the mining staff will take an active part in this work and contribute from time to time to the technical literature in respective fields of study.

Announcement was recently made of the appointment of David R. Mitchell as professor of mining and head of the department, effective at the end of the present college year. Professor Mitchell has had fine industrial experience, and is a certified first grade mine foreman in the bituminous regions of Pennsylvania. He has a brilliant record as an educator and researcher and is recognized as an authority on the preparation and treatment of coal which are important problems in Pennsylvania from an economic, as well as technical point of view.

Doctors Helmut Landsberg and Hans Neuberger operate the seismograph station and give the instruction in geophysics and meteorology. They will also direct the studies in mine safety and health, more particularly roof control and air-conditioning of coal mines. Dr. Landsberg is the author of 35 technical papers, 14 of which have been published since he joined the staff of the school in 1933. Two recent papers were on ventilation problems and three on mine subsidence and roof control. Dr. Neuberger joined the staff of the school last September.

Announcement was made also of the appointment of John W. Buch to the mining department staff, effective February 1, 1938. Mr. Buch has a fine undergraduate record, excellent industrial experience on mechanization problems and is a certified mine foreman in the anthracite region. He taught evening classes in mining during the winter months of 1927-30. In addition to teaching the mining subjects, Mr. Buch will be responsible for

the studies in coal production methods and mechanization problems.

In due time Professor Mitchell will publish a statement in *Mineral Industries*, setting forth the aims and objectives of the reorganized department.

Stream Pollution

(Continued from page 46)

ocean beaches will be of great assistance.

Publicize Present Work

Finally, I believe that publicity of the right sort must be given by industry to the efforts it is making to eliminate stream pollution. Through the various local associations, conferences should be arranged with the sporting editors of the big State dailies. As the subject is a technical one, releases should be prepared by association executives and sent to the local press and the magazines for publication. Occasional talks before clubs, chambers of commerce, etc., illustrated, if possible, by lantern slides, can demonstrate that industry is really doing its best to eliminate the stream pollution evil to the extent that it contributes to it. Associations must be represented in the State legislatures and give particular attention to bills introduced by anti-pollution enthusiasts lest unreasonably stringent regulations be enacted into the law. The American Mining Congress should be encouraged in every way in the battle it is making in Washington in opposition to legislation such as the Barkley-Lonergan bill. The endorsement of the industry should be given to scientific investigations and grants in aid under Federal supervision which will constructively advise and help the mining industry in contributing its share to the elimination of the pollution evil. If this program be followed I believe that the sportsmen and the public health authorities both will be convinced that they can anticipate cooperation from the mining industry in the elimination of pollution to any extent that they have a right to expect it. They will also be convinced that metal mining will stand united with all other industries in firm and unyielding opposition to the imposition of confiscatory, unreasonable and bureaucratic supervision which would be destructive of industry, even if it did succeed in eliminating the much lesser evil. This attitude and this program I sincerely urge for your earnest consideration and endorsement.



NEWS and VIEWS

Coal Prices Effective Despite Protests

In spite of numerous protests filed by both consumers and producers, minimum prices for various classifications of coal fixed by the National Bituminous Coal Commission on November 30 went into effect at midnight of December 15.

In disregarding the pleas for a stay in the effective date of the prices, the Commission urged that those attacking the new rates be ready to present their arguments in formal hearings at the earliest possible date.

Anticipation that the Carter Coal Company would seek an injunction in the New York courts restraining the Commission from putting its regulatory prices into effect did not materialize. In dismissing the plea of the Carter Coal Company for a stay of the effective date of the minimum prices, the Commission ruled that the company had had fair opportunity to acquaint itself fully with the effect of the prices.

Meanwhile, complaints against the minimum fixed by the Commission were received in large numbers. Among those who have appeared on behalf of consumers were Joseph M. Messnig, assistant attorney general of the State of New York, who appeared on behalf of the State and taxpayers who are coal consumers; and the Associated Industries of New York, representing approximately 1,500 industries of New York State.

Anaconda Employment

Payrolls of the Anaconda Copper Mining Company at its Montana properties are practically the same as at the same time last year, in spite of curtailed operations since the spring months, according to recent reports from Butte. At the end of January, 1937, payrolls showed 10,873 workers, while at the end of November there were 10,872 workers employed by Anaconda in the district.

Harry Moses Named President of H. C. Frick Coke and U.S. Coal

Following a recent meeting of the Board of Directors of the H. C. Frick Coke Company and the U. S. Coal and Coke Company, it was announced that Harry M. Moses will succeed his father, Thomas Moses, as president of the two companies.

The elder Mr. Moses was elected a vice president of United States Steel Corporation of Delaware, in charge of raw materials for the U. S. Steel group, on December 9. He has been



THOS. MOSES



HARRY M. MOSES

Harry Moses started his business career as an assistant mine foreman of the U. S. Steel coal producing subsidiaries in 1919, following which he held various other supervisory positions. He was made general superintendent of the Kentucky and West Virginia operations of U. S. Coal & Coke Company in 1933.

Announcement was also made by the directors of the election of Charles A. Albright, now secretary of the Frick Company, to a vice presidency of both coal concerns.

president of the two coal-producing units for 10 years, and for more than 60 years he has been closely affiliated with the bituminous industry.

He was the youngest son of an immigrant family from Wales, and went to work in Indiana coal mines at the age of 11. He had obtained only slight public schooling, but with the aid of teaching from his wife, whom he married at the age of 30, he became secretary of the State Department of Mines at 35, and at 58 he had attained the presidency of the two coal concerns.

Further Gain in Copper Stocks

Copper statistics for the month of November, released by Copper Institute, Inc., showed an unfavorable domestic position but an improving foreign one, with refined stocks in the United States increasing 38,763 tons during November, compared with a decrease of 8,083 tons at foreign sources. Domestic refined stocks stood at 221,676 tons at the end of Novem-

ber, compared with 181,842 tons at the close of October. Foreign refined stocks were 192,170 tons at the end of November, compared with 200,253 tons at the end of October.

The increase in refined stocks took place despite a decrease of 11,240 tons in domestic output of refined copper. November production amounted to 75,790 tons compared with 87,030 tons in October. Most of this decrease in production was accounted for by primary output, which dropped from 80,437 tons in October to 69,898 tons in November.

E. J. O'Brien Heads Southern Wyoming Coal Operators

The following officers have been elected by the Southern Wyoming Coal Operators Association: President, E. J. O'Brien, Salt Lake City, Utah; vice president, W. J. Thompson, Denver, Colorado; treasurer, L. W. Mitchell, Cheyenne, Wyoming.

The following comprise the directors of the association: Ben Cowlishaw, Lincoln Star Coal Co., Kemmerer; A. B. Foulger, Lion Coal Co., Ogden, Utah; John Lucas, Sr., Rock Springs Fuel Co., Rock Springs; T. J. O'Brien, Gunn-Quealy Coal Co., Salt Lake City; L. M. Pratt, Kemmerer Coal Co., Frontier; T. C. Russell, Diamond Coal & Coke Co., Butte, Montana; and W. J. Thompson, Colony Coal Co., Denver, Colorado.

Colorado Mining Association To Meet

The annual meeting of the Colorado Mining Association will be held at Pueblo, Colo., January 10-11, 1938. The preliminary program as announced by the Arrangement Committee is as follows:

Monday, January 10: (1) Discussions on Safety Practices in Mines, Mills, and Plants, Together with Analyses of Workmen's Compensation Costs and Their Effect on the Mining Industry; (2) Cooperative Geological Survey of the State of Colorado; (3) Care and Treatment of Mill Tailings with Special Reference to Costs and Methods Used in Various Districts; (4) "Just Another Bridge," A talking moving picture, showing the use of cables in the construction of the golden gate bridge, courtesy of John A. Roebling's Sons.

Monday evening: Annual banquet and silver smoker.

Tuesday, January 11: (1) Trip through the Minnequa plant of the Colorado Fuel and Iron Corporation; (2) Report of State Mineral Resources Board, by W. E. Scott, Jr., Central City, chairman; (3) Mining Iron Ore and Its Treatment in Steel Mills, by a speaker from the Colorado Fuel and Iron Corporation; (4) Some Aspects of Mining for Vanadium in Colorado, by Blair Burwell, general superintendent, United States Vanadium Corporation; (5) Recent Trends in Tungsten Production; (6) Problems of the Independent Petroleum Producer; (7) Colorado and Her Mining Camps' Contribution to the Betterment of Mankind, by William R. Eaton, Denver; (8) The Story of Lead Smelting, a moving picture, presented by the U. S. Bureau of Mines; (9) Consolidated Mining and Smelting Company Operations at Trail, British Columbia—a moving picture; (10) Colorado School of Mines speakers, Dr. F. M. Coolbaugh, presiding.

Tuesday evening: Sowbelly dinner at the Fairgrounds Dining Hall.

Steel Plant Completed

Another huge unit was added to Pittsburgh steel making equipment recently when the Jones and Laughlin

Steel Corporation formally announced the completion of a \$25,000,000 strip and sheet mill that covers an area about a half mile long.

Different units of the plant were completed and placed in operation during the spring and summer, but it was not until December 15 that officials felt that the plant was entirely finished and capable of operating at peak efficiency.

Full capacity operations at the mill will employ 1,200 men. Inasmuch as the new plant makes steel products not turned out in any other Jones and Laughlin Plant—many of them not made elsewhere in the Pittsburgh area—this will mean 1,200 more jobs for workers in that area.

Mining Extension Enrollment

Enrollment in the classes of the Mining Extension Department of West Virginia University totalled 1,806 men on December 1, with employees of 115 companies represented. The ten companies having the largest number of men enrolled were: Koppers Coal Co., 178; New River Co., 124; Consolidation Coal Co., 111; Carter Coal Co., 84; Pardee-Perkins Lumber Co., 81; Pocahontas Fuel Co., 78; New River and Pocahontas Con-

"Let's See Now—Where Am I?"



Wilkes-Barre (Pa.) Times Leader

R. L. IRELAND Accepts Program Committee Chairmanship of Coal Mining Convention

With the recent acceptance by R. L. Ireland, vice president of the Hanna Coal Co., of the chairmanship of the Program Committee for the 15th Annual Coal Mining Convention and Exposition of the American Mining Congress, to be held at Music Hall, Cincinnati, Ohio, May 2-6, 1938, preparation of a varied, timely and interesting program is assured. Mr. Ireland through his wide experience as an operating executive is thoroughly familiar with all branches of coal mining and is recognized as one of the leaders of the industry.

Lending their very able assistance to Mr. Ireland in this important work in which cooperation is the keynote to success, will be the following State Chairmen:

C. S. Blair, Vice Pres., Black Diamond Coal Mining Co. (Alabama).
L. C. Campbell, Asst. to Vice Pres., Koppers Coal Co. (Pennsylvania Bituminous).
Heber Denman, Pres., Paris Purity Coal Co. (Arkansas-Oklahoma).
Albert Gateley, Gen. Supt., Republic Coal Co. (Montana).
D. E. Griffith, Gen. Supt., Pruden Coal and Coke Co. (Tennessee).
D. S. Hanley, Vice Pres., Pacific Coast Coal Co. (Washington).
Carl T. Hayden, Vice Pres. & Gen. Mgr., Sahara Coal Co. (Illinois).
Moroni Heiner, Pres., Utah Fuel Co. (Utah).
James Hyslop, Chf. Engr., Walter Bledsoe & Co. (Indiana).
G. A. Knox, Gen. Supt., Gunn-Qualey Coal Co. (Wyoming).
Harry La Viers, Vice Pres., South-East Coal Co. (Kentucky).
L. T. Putman, Gen. Supt., Raleigh-Wyoming Mining Co. (West Virginia).



R. L. IRELAND

A. J. Ruffini, Supt., Wheeling Township Coal Mining Co. (Ohio).
George E. Rupp, Mgr., Mng. Dept., Colorado Fuel & Iron Corporation (Colorado).
W. C. Shank, Prs., Reliance Coal Corporation (Missouri-Kansas).
John R. Sharp, Gen. Mgr., Philadelphia & Reading Coal & Iron Co. (Pennsylvania Anthracite).
George T. Stevens, Mining Engr., Clinchfield Coal Corporation (Virginia).

solidated Coal Co., 74; Industrial Collieries Co., 52; Pond Creek Pocahontas Co., 52; and Island Creek Coal Co., 49.

The ten largest classes in the State range from 81 at Webster Springs down to 49 at Whipple and Springton, with Beckley, Logan No. 1, Berwind, Gary, Morgantown, Bartley, and Welch, following Webster Springs in the order named.

Enrollments according to the subjects taught are: first year work, 1,414; second year work, 162; mining electricity, 93; foremanship, 88; and mathematics, 49.

Large Operations For Yellow Aster

Reports indicate that the Yellow Aster mine near Randsburg, Calif., with a credited production to date of more than \$13,000,000, and which is operated by the Anglo-American Mining Corporation, H. W. Klipstein, executive vice president, will soon be the scene of what is probably the most extensive open-pit gold mining operation ever undertaken in the history of California.

The old Yellow Aster Glory Hole will be the locus of the proposed operation. Today the pit consists of a huge gash in the mountain from which the ore was extracted by early miners. According to estimates, the remainder of the deposit contains from 8,000,000 to 12,000,000 tons of material to be treated by scientific methods for its gold content. The contract has already been awarded for excavating the first 5,000,000 tons.

The face of this huge pit, measuring 400 ft. from top to bottom, will be shot down gradually. Power shovels will be used to load the material, which will then be delivered to a crushing and screening plant for segregating the waste from the pay ore. Mechanical sorting has proven successful, but this is probably the first time that it will be used in this region on such a large scale as proposed for the Yellow Aster operation. Speed and economy in handling the rock material are its principal advantages.

For the past three years the company has been formulating plans for the operation of the big power shovel project, and conducting exhaustive

experiments to determine the most economical method of handling its large low grade deposit. These preparations are now in the last stages of completion and it is planned to inaugurate production early in 1938. By that time the new crushing, screening and grinding equipment will be installed near the site of the old plant which has already been partially dismantled.

Bibliography of Bureau of Mines

Nearly 2,000 publications on the subject of coal have been prepared by engineers and chemists of the Bureau of Mines, Department of the Interior, since the organization of the Bureau in 1910. The various items in this extensive library of coal are described in a bibliography just issued by the Bureau.

Coal, its production and use, has been a subject of laboratory and field study by the Bureau of Mines since its organization. The bibliography just published includes publications issued by the Bureau, those written by its staff for the technical press, and

reports of work done jointly with states, colleges, and industries.

References are given under 18 subject classifications covering the occurrence, composition, properties, mining preparation, and utilization by combustion, carbonization, gasification, and liquefaction of coal. In addition, there is included a complete index of subjects and an index of authors. Within each subject classification the papers are separated in groups based on the medium of publication and arranged in each group alphabetically by authors. Thus the user can find almost instantly all the publications of the Bureau on any subject related to coal.

This 145-page bibliography is published as Technical Paper 576, "Bibliography of United States Bureau of Mines Investigations on Coal and Its Products, 1910-35", by A. C. Fieldner, Alden H. Emery, and M. W. von Bernewitz.

Robinson Heads Kanawha Valley Institute

Meeting at Montgomery, W. Va., on December 10, 1937, the Kanawha Valley Mining Institute elected the following officers for 1938: Carel Robinson, general manager, Kelleys Creek Collieries Company, president;

Mammoth, third vice president; C. O. Morris, West Virginia Department of Mines, Charleston, secretary and treasurer.

New members of the Board of Directors include the following: Carel Robinson, chairman; D. W. Martin, Roy Long, W. F. Wolfe, W. B. Devenny, W. R. Perfater, A. A. Gallagher, Charles Vawter, George Brooks, and A. M. Vickers.

C. A. Pearse, of Carbon Fuel Company, is the retiring president.



NATHAN L. MILLER

cused from their classes to permit them to witness the christening of the vessel.

The new ship is identical to the new *William A. Irvin* in both construction and equipment.

Like its sister ships, its motive power is derived from cross-compound steam turbines like those used on ocean ships instead of the usual reciprocating engines found on lake vessels.

Overall length is 610 ft. 9 in., molded beam 60 ft. and molded depth 32 ft. 6 in. Draft is designed for a maximum of 22 ft. and displacement is 18,780 long tons on the maximum draft. Shaft horsepower is 2,000 at 90 r.p.m. and 2,300 at 99 r.p.m.

The coal bunker is elevated and located between the boiler room and the engine room, permitting self-feeding to the stokers by means of gravity chutes. Hatch covers are of the design introduced on these ships, being of solid type. Handling is effected by means of a gantry crane running the entire length of the cargo deck.

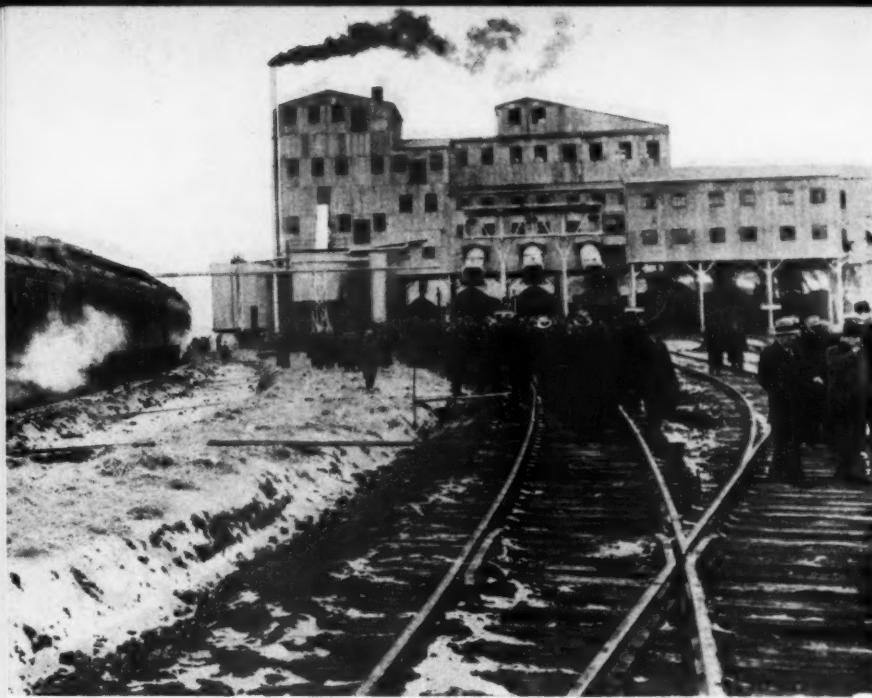
Crew quarters are the most modern and convenient type devised up to this time. They are located on both the forward and after decks and the quarters, dining room and galley are all of special design. Each room opens into an inside passage, thus eliminating most of the outside doors. It is possible to traverse the entire length of the ship without going on deck. All rooms are mechanically ventilated by means of filtered air, which is forced through a duct system to each room.

Also included on the *Governor Miller* are special accommodations for passengers. Four double staterooms with private baths are provided and a private galley and dining room are available for use of guests.



CAREL ROBINSON

D. W. Martin, general superintendent, Wyatt Coal Co., first vice president; Roy Long, superintendent, No. 5 Mine, Koppers Coal Company, Powellton, second vice president; W. F. Wolfe, superintendent of the Kanawha & Hocking Coal and Coke Company,



McDaniel photo, Canton, Ill.

Tipple and washing plant at Buckheart Mine

UNITED ELECTRIC HOST TO 600 AT FORMAL OPENING OF BUCKHEART MINE

MORE than 600 business men, coal merchants, manufacturers' representatives and business executives were guests of the United Electric Coal Companies on Wednesday, December 1, at the formal opening of their new Buckheart mine, six miles southeast of Canton, Ill.

Special trains and buses transported the visitors to the mine from points all over the midwest. The special trains and buses converged at the mine property at noon, where lunch was served immediately, and an inspection of the mine, tipple and washing plant was commenced.

All guests were given a full opportunity to inspect the methods of mining, transporting, sizing, washing and treating of the new Buckheart coal, which is now being supplied to the midwest trade.

The new Buckheart mine is considered model in every respect. The coal is of an unusually good grade and all natural conditions are entirely in favor of the operation. It is also considered model because the most modern equipment ever designed has been installed and, in addition, the natural

setting for the plant is an unusually attractive one.

The mine is equipped to produce approximately 1,000,000 tons of coal per year. The overburden is stripped from the coal seam by means of a

Viewing the mining and stripping operations

McDaniel photo, Canton, Ill.



huge Bucyrus-Erie 950-B full revolving Ward-Leonard control electric shovel, which is one of the largest ever manufactured. This shovel has a working weight of 2,500,000 pounds, carrying a 30 cubic yard alloy steel dipper with a 108-foot boom and 72-foot tubular steel handle. Maximum dumping height is 74 ft. 6 in., and cleanup radius, 115 ft.

The coal is loaded by means of a Bucyrus-Erie 85-B full revolving Ward-Leonard electric shovel, this shovel carrying a special 5 cubic yard welded alloy steel coal loading dipper. It is estimated this machine will load between 4,000 and 5,000 tons of coal each shift.

The tipple and washing plant, designed and constructed especially for this job by the Koppers-Rheolaveur Company, is equipped to handle 650 tons per hour. An adjustable primary breaker controls the maximum size of coal entering the plant on the run of mine conveyor. The plus 12-in. size is crushed to 12 in. cubes, the 12 in. x 6 in. and the 6 in. x 4 in. sizes being hand picked and the 4 in. x 0 size being washed. The washing plant is rated at approximately 400 tons per hour.

There are seven loading tracks under the tipple and washing plant and the greatest flexibility in the preparation of all sizes and modifications of the various sizes is realized due to the many advancements made in the design of the plant and in special accessory equipment.

The intermediate sizes are heat dried and provisions are made for oil treating any and all sizes, as desired.

Important Mining Developments Described At Convention of Northwest Mining Association

THE 43rd Mining Convention of the Northwest Mining Association and the Mining Bureau of the Spokane Chamber of Commerce was held in Spokane, Washington, December 3 and 4, 1937.

At the luncheon on the opening day, an interesting address was presented by Burt B. Brewster, editor and publisher, *The Mining and Contracting Review*, on the subject "The Engineer and the New Deal," which was followed by animated discussion.

With Bliss Moore, president of the Northwest Mining Association, presiding, a meeting was held the evening of the 3rd at which addresses of welcome were presented by H. T. Anthony, president of the Chamber of Commerce of Spokane, and by Governor Clarence Martin of Washington.

B. A. Stimmel, superintendent of the zinc plant, Consolidated Mining and Smelting Company of Canada, at Trail, British Columbia, presented a paper in which he outlined the vast importance of the mining industry in the Northwest region of the United States and the adjoining districts in Canada, and outlined the history of the successes made by the Consolidated Mining and Smelting Company of Canada in handling labor relations problems during the past 20 years.

Brief talks were also given by Earl K. Nixon, director, State of Oregon Department of Geology and Mineral Industries, and also by representatives of Coeur d'Alene mining companies.

On Saturday morning, December 4, another session was held at which J. Richard Brown, mining engineer of Spokane, presided. A paper entitled "The State and Its Natural Resources," by J. B. Fink, director of the Department of Conservation and Development of the State of Washington, was read by T. B. Hill of that department. The importance of the natural resources, agriculture, forests, water, fish, and minerals to the State of Washington was pointed out, and the work of the various divisions of the Department of Conservation concerned with these different resources described in detail. It was particularly indicated how public interest in the mining industry of Washington had lagged con-

siderably until comparatively recently.

"The sound development of this resource should be encouraged by every legitimate means," Mr. Fink emphasized. "First the public should be informed as to the soundness and importance of the mining industry so that they may become as 'mine minded' as they have been 'lumber, or fish, or agricultural minded.' A sound, active, favorable public sentiment must be created. Second, the state must be required to extend such aid as may be found necessary. The mining industry surely should receive consideration in some reasonable proportion to that which is extended to industry based on the other natural resources."

H. A. Doerner, metallurgist, U. S. Bureau of Mines, Pullman, Washington, then described possibilities of establishing an industry to extract metallic magnesium from the high-grade magnesite deposits in Stevens County, Washington, in a paper entitled "Present Outlook for Magnesium Industry in the Northwest." Declaring that a survey of mineral resources of the Northwest had revealed that the magnesite deposits in Stevens County, Washington, are perhaps more extensive than any other high-grade domestic source, and that they now furnish a large part of the domestic production of magnesium products, including magnesia refractories and cement, he pointed out that among all the possibilities considered, the production of magnesium metal from this abundant raw material seems to offer one of the best opportunities for a new metallurgical industry in that region.

A paper on "The Securities Act of 1933 and Its Application to Mining Securities" was then presented by Day Karr, regional administrator, Eighth Division of the Securities and Exchange Commission. Mr. Karr proceeded to outline in considerable detail the registration provisions of the Act, together with the applicable exemptions, particularly those which the Commission has found from experience to be the ones most often claimed by issuers of mining securities. These comprise (1) the so-called "intrastate exemption," (2) that one provided for by Rule 200, and many times referred to as the "\$30,000 exemption," and (3) the one provided for by Rule 202,

making available the exemption if provisions of the rule are complied with and the offering does not exceed a total price to the public of \$100,000.

Discussion of Mr. Karr's paper was given by Burt B. Brewster, who pointed out that even though the activities of the Commission are blocking large scale frauds, they are actually hindering the work of the legitimate promoter, while more intrastate promotions of shady character are being put over than ever before. Mr. Brewster's recommendations were as follows:

"Let each State have a mine approval board made up of mining engineers of reputation beyond possible attack, of proper qualifications, specifically outlined, appointed in the interest of honest mining. Issue no State promise without the unanimous agreement of the board that the venture has the aspect of respectable chance.

"In turn, let that board report to a national board at Washington, and let that national board composed of high caliber mining engineers pass upon interstate commerce."

At the Saturday luncheon R. W. Nuzum, Spokane attorney, presided, at which recent developments on the property of the Chelan Copper Company were described by Howe Sound Company officials.

The Saturday afternoon session was presided over by Dean E. A. Drucker, School of Mines, Pullman, Washington.

Dean Milnor Roberts, of the College of Mines, University of Washington, in a paper entitled "Mining in the Cascade Range, Washington," outlined recent developments in that area. Among the activities mentioned briefly were: The Boundary-Red Mountain mine, now termed the International; the Azurite Mine; the mercury mine at Morton; prospecting on the eastern slope of the Cascades; and the outstanding work being done at the Chelan Copper mine.

Describing this latter development, Dean Roberts said, "Formerly called the Holden mine, this deposit of low-grade copper-gold ore has been explored during recent years by drifts, raises, and diamond-drill holes with results that warranted the construction of a 1,000-ton mill. The property is owned by the Howe Sound Company of New York, which is handling it through the Chelan Division. The staff has been drawn from the staff of the Britannia Mining and Smelting Company, a subsidiary of Howe Sound Company that operates the Britannia Mine near Vancouver, B. C. . . .

"When the mine is in operation ore

will fall through transfer chutes to the haulage level. On this level is an adit, the mouth of which is close to the mill. The milling process will be straight flotation. The concentrate will be trucked to Lake Chelan, shipped by barge down the lake to Lakeside, trucked a short haul to the railroad, and shipped to Tacoma. A haul line is being built along the lake from Chelan Falls to the mine. The construction now nearing completion has given work to many hundred men. Once the mine and the mill begin operation next spring (1938), large crews will be employed, and both directly and indirectly much business will result to the state."

"Mining Developments in Montana in 1937" was the subject of a talk given by Carl J. Trauerman, president of the Mining Association of Montana, who stated, "While accurate figures for 1937 are not yet available, estimates indicate the 1937 production of gold, silver, lead, and copper will be larger than in 1936, with zinc again the exception, as zinc production was drastically curtailed in July, owing to power shortage caused by lack of ordinary water supply in our main power-generating streams."

He said that production of gold from the Butte area would probably show a material increase in 1938, brought about by the opening late in 1937 of the new cyanide plant of Butte-Highlands about 18 miles south of Butte. He estimated that this new development would probably raise the Silver Bow County production to about 15 percent of the state's total gold output, present production for that county comprising only about 10 percent of the state's output.

Motion pictures of the construction of the new Pend Oreille hydro-electric plant were shown by Charles A. R. Lambly, following which the Resolutions Committee made its report.

These resolutions, adopted without dissent, affirmed and heartily supported the Declaration of Policy of the Western Division of the American Mining Congress; opposed the elimination of the percentage depletion allowance; recommended immediate repeal of the undistributed profits tax; reiterated the demand for the continued policy of purchasing newly mined silver with the ultimate objective the free coinage of silver; recommended a mining unit within the SEC and modification of the SEC administration; opposed withdrawal of lands in the National Forests and Indian Reservations from mineral entry; and favored the Hayden-Ickes mapping program.

Attorney E. P. Ryan was toastmaster at a lively smoker which concluded the convention.

A mineral exhibit, comprising specimens from northwestern states and from British Columbia was on display, as well as a map exhibit by Erle P. Dudley, mining engineer, Kellogg, Idaho.

Officers of the Northwest Mining Association are as follows: Bliss Moore, president; James F. McCarthy, vice president; R. O. Oscarson, treasurer; Charles T. Robbins, secretary; and Walter J. Nicholls, chairman of the Mining Bureau.

Chairmen of the convention committees were as follows: Finance, J. W. Turner; Program, R. O. Oscarson; Mineral Exhibit, H. R. Buisman; and Entertainment, Storey Buck.

Tungsten Association Formed

Receipts of two issues of a new publication "Tungsten" in November informs us of the formation of the American Tungsten Association, with headquarters at 111 Sutter St., San Francisco, Calif. The object of the organization, according to Charles H. Segerstrom, president of the association, "is to disseminate information regarding tungsten and its uses, particularly with respect to the American supply; also, to furnish data pertaining to the mines and to the approximate production and the prices of the domestic supply." Much of the information will be publicized by means of a very attractive and informative booklet, the first number of which appeared in July, and the second in October, 1937.

Present and recent hostilities in China, the principal world producer, have closed that source of supply, thus bringing about a more or less chaotic condition in the world markets for that metal. Prices which skyrocketed early in 1937 have fallen back somewhat, accompanying the spectacular drop in steel operation, the principal consumer of that metal.

What may be the ultimate effect of the outcome of the Japanese-Chinese undeclared war on the tungsten output from China is naturally of vital concern to the tungsten producers in the United States. Writing in the October issue of "Tungsten," Charles H. Segerstrom states, "In the United States many new producers are appearing, prospects are being developed and old mines reopened because of the current prices. During

this period we will witness a great increase in domestic production beginning after January, 1938, when important producers will have completed the new milling plant.

"The United States Vanadium Corporation, a subsidiary of the Union Carbide Company, is completing a 250-ton per day milling plant at Pine Creek, near Bishop, Calif. The Nevada Tungsten Corporation of Reno, Nev., is progressing with a 100-ton per day milling plant near Gardnerville, Nev. Reopening the old Beauregard mine near Benton Mills, Inyo County, Calif., the Tungsten Corporation of California, of which K. Wright is the president, is completing work on a new milling plant of 150 tons per day."

This prediction was undoubtedly made prior to the present industrial slump, but with the likelihood that conditions in China will not iron themselves out for some little time in the future, it seems highly probable that the demand for supplies from domestic sources will continue in sizable amount.

Producer-members of the new organization comprise operators from Nevada, California, Arizona, Colorado, Idaho, Montana, New Mexico, and Washington.

Simple Gold Test

The Canadian Institute of Mining and Metallurgy has published directions for making a simple field test for gold by which prospectors can determine whether their samples contain values of \$2.00 or more per ton. By using this method, a rough idea can be had of the work of discovery without the delay and expense of having the ore assayed.

In making the test, about 2 lb. of the mineral-bearing rock is crushed as fine as possible and the powder is panned to concentrate its heavier constituents. As much of the concentrate as will go on a 25-cent piece is then placed in a test tube which has been one-third filled with a 10 percent iodine solution. After heating this about 10 minutes, during which it is not allowed to boil, it is set aside until the liquid clears. The solution is then transferred to a hot watch crystal with an eye dropper, and allowed to evaporate, drop by drop. If the ore has a gold content amounting to \$2.00 or more per ton, a gold mirror will form on the glass. Cost of the equipment used in the process is less than \$5.00.

PERSONALS



D. C. JACKLING, president of the Utah Copper Company, and director and chairman of the operating committee of Kennecott Copper Corporation, has been elected president of the American Institute of Mining and Metallurgical Engineers.

PAUL D. MERICA, vice president of the International Nickel Company, and **SILFRED SYKES**, assistant to the



D. C. JACKLING

president of the Inland Steel Company, were elected vice presidents.

Among the directors chosen were the following: **LEROY SALSICH**, president of the Oliver Iron Mining Company; **H. Y. WALKER**, vice president of the American Smelting and Refining Company; and **WILLIAM WRAITH**, vice president of the Inspiration Consolidated, Andes Copper, and Greene-Cananea Copper Companies.

LOUIS C. BENDER, general superintendent of the Anaconda Reduction Plant of the Anaconda Copper Mining Company, recently retired from that position to act as consulting metallurgist for the company. He is succeeded by **W. E. MITCHELL**, past general superintendent at Great Falls; **S. S. WEIMER** succeeds Mr. Mitchell at Great Falls.

WILLIAM D. BRYSON, of Salt Lake City, Utah, recently assumed the duties of general manager of the properties of the West Virginia Coal and Coke Corporation, with mines on Main Island Creek in Logan County and at Norton and Junior in northern West Virginia, according to an announcement by Colonel Robert W. Lee, president of the corporation. Mr. Bryson succeeds **LEE OTT**, former conservation commissioner of West Virginia, who has retired from active service for the company, and his appointment became effective on November 23.

Before he accepted his present position, Mr. Bryson was general superintendent for the Utah Fuel Company, Salt Lake City. His past experience

includes responsible work in the coal fields of Utah, Wyoming, Colorado and Kentucky, including 14 years as general manager and superintendent for the Colony Coal Company with holdings in Rock Springs, Wyo.

ROBERT F. MEHL, director of the Metals Research Laboratory at Carnegie Institute of Technology, Pittsburgh, is the new chairman of the Institute of Metals Division of the American Institute of Mining and Metallurgical Engineers.

WILLIAM F. BOERICKE, who has been senior mining engineer in the Registration Division of the Securities and Exchange Committee, since December, 1934, will sail from San Francisco in January for the Philippines, where he will assume his new duties as



WM. F. BOERICKE

valuation engineer for the Bureau of Mines of the Philippine Government. His new work will renew past association with Dr. H. Foster Bain. Mrs. Boericke will accompany him.



WM. D. BRYSON

THOMAS ALLEN, chief coal mine inspector for Colorado, recently assigned the following four new inspectors: **S. McCALLUM**, at Cecil Springs; **J. J. RODDY**, at Montrose; **GEORGE H. SMITH**, at Canon City; and **MYRON WILLIAMS**, at Walsenburg.

THOMAS H. DUFFY is now assistant fuel service engineer for the Chesapeake & Ohio Railway Company, with headquarters at Richmond, Va. Mr. Duffy's appointment was effective November 1.

STANLEY M. HUNTER has been appointed manager of sales for the American Hoist and Derrick Company of St. Paul, Minn. Mr. Hunter has been associated with the company for the last two years.

CHARLES WILL WRIGHT, foreign mineral specialist of the United States Bureau of Mines, returned to Washington on December 13, after an absence of some 2½ years, during which he has made detailed studies of the mineral industries in all the European



CHARLES WILL WRIGHT

countries, with the exception of England and Spain. He will be in Washington for a month or so, after which he will return to Europe to complete the studies on England and Spain, make studies of the mineral industries in some of the African colonies, and work up regional reports on each of the important mineral commodities.

HOWARD I. YOUNG, president, The American Zinc Lead and Smelting Company, and president, the American Mining Congress, spoke informally on present day labor relations at a meeting of the National Industrial Council held in New York on December 6.

ARTHUR NOTMAN, consulting mining engineer of New York, has been elected a director of Copper Canyon Mining Company, a gold mining concern in Nevada.

JULIAN D. CONOVER, **ELLSWORTH C. ALVORD**, and **DONALD A. CALLAHAN** were the principal speakers at a meeting of the Mining and Metallurgical Society of America held in New York on December 7. Mr. Conover spoke on the general tax situation and prospects, Mr. Alvord on the undistributed earnings tax, and Mr. Callahan on various aspects of de-

pletion. Spirited discussion followed their talks.

ERSKINE RAMSAY, chairman of the board, Alabama By-Products Corporation, was recently elected chairman of the board of regents of the Alabama Museum, succeeding **LINDLEY MORTON**, of Birmingham, who asked that he be relieved of the chairmanship.

Mr. Ramsay also donned regal robes late in November to act as King Cheer at a three-day Christmas Carnival held in Birmingham.

JOHN LOWRY has resigned as assistant general manager of the West Virginia Coal and Coke Corporation, at Omar, according to a recent announcement by William D. Bryson, general manager. Mr. Lowry's successor has not yet been named.

According to the same announcement, **ANDY W. WHITT** has been appointed superintendent of the No. 5 mine of the company, taking the place of **W. W. BREWER**. Mr. Whitt has been assistant chief engineer with the Omar Company and its predecessors for the past 11 years.

G. GORDON COOK, secretary and treasurer of Anthracite Industries, Inc., has been elected vice president and treasurer by the Board of Directors of that organization, according to a statement made recently by **FRANK W. ERNEST, JR.**, president. **GEORGE W. BARNES** was elected secretary and assistant treasurer at the same time.

Obituaries

WILLIAM J. HARAHAN, president of the Chesapeake and Ohio, Nickel Plate and Pere Marquette, died in the C. & O. Hospital at Clifton Forge, Va., December 14, at the age of 69.

With a heritage of railroading gained from his father, the late James Theodore Harahan, president of the Illinois Central Railroad, Mr. Harahan built one of the most notable and successful railroad careers, embracing half a century of varied experience in the shop, in railway engineering and in operating posts. Prior to his election to the first of his two terms as president of the C. & O. in 1920, he had served as vice president of the Illinois Central, vice president of the Erie, president of the Seaboard Airline Railway, as staff officer and, ultimately, chief of staff for the director-general of railroads

during the war period of Federal control.

Under his able guidance, the C. & O. Railroad was physically and financially transformed in 1923-1929, and acquired a recognized status as one of the world's most efficient transportation machines.

ROBERT J. DENEEN, vice president, Ohio Brass Company, died at Augustana Hospital, Chicago, on December 12, at the age of 57, following an intermittent illness of two years. Mr.



ROBERT J. DENEEN

Deneen had been associated with the Ohio Brass Company for 30 years, serving in the capacity of district sales manager in the Chicago area until 1928 when he was appointed vice president of Midwestern sales with headquarters in Chicago.

B. R. BERTHELSON, superintendent of the Zeibright Mine of the Empire Star Company, Grass Valley, Calif., died in San Francisco December 4, at the age of 42. Mr. Berthelson was at one time superintendent of the properties of the Consolidated Coppermines Company, Kimberly, Nev.

JAMES BAGLEY, an official of the Bucoda Coal Company and the big Four Coal Company, Washington, died at Seattle, November 23 at the age of 60. Mr. Bagley was former Washington State Mine Inspector, and at the time of his death he was a member of the National Bituminous Coal Commission Board administering the Coal Act in Alaska, Oregon and Washington.

BOOK REVIEWS

RETROSPECT. By T. A. Rickard. Whittlesey House (McGraw-Hill Book Company), New York City, 1937. 420 pages. Price \$3.

THE reviewer, who had contributed from Australia a goodly number of articles on metallurgy to the *Mining and Scientific Press* (San Francisco) and *The Mining Magazine* (London), later worked for and with the author of this autobiography for several years in California. Also, the reviewer knows so much of Rickard's writings and journeys of observation, and has noted his doing since the *M. and S. P.* was acquired by *Engineering and Mining Journal* in 1922, that he could almost write a review without looking at this record of T. A.'s life. Why? Because Rickard is the type of man that (this use of "that" is one of his rules) commands attention and respect through his ability as an engineer and technical writer. He is a keen observer, honest in his findings, and frank and fearless in his writings. A man with an engineer's training and observations in four continents, and able to write clearly and accurately on anything pertaining to mining and ore treatment, also having good business sense, is one to try to follow.

In 1906, during the earthquake and fire in San Francisco, Rickard was not dismayed when the *Mining and Scientific Press* plant was destroyed. He set to and reorganized it stronger than ever.

When the mining industry was upset over the prospect of paying heavy royalties for using a flotation process, T. A. jumped into the fray with his pen and in person, on the side of the metallurgists.

No editor has interviewed the many engineers of national and international repute, printing their useful work in the *M. and S. P.*, as T. A. did. These interviews were later set up in book form.

He originated (as far as the reviewer knows) the starting of a series of discussions or articles on some phase of mining and metallurgy in the *E. and M. J.* and *M. and S. P.*, then published them in book form, first introducing the problem and later reviewing what was said by the writers. These books were and are valuable: "Ore Deposits," "Pyrite Smelting," "Recent Cyanide Practice," "Sampling

and Estimation of Ore in a Mine," and "Concentration by Flotation," for example.

Following is an almost complete list of Rickard's books, chronologically arranged:

Across the San Juan Mountains (Colorado)	1903
Copper Mines of Lake Superior (Michigan)	1905
Ore Deposits (general)	1905
Pyrite Smelting (general)	1905
Economics of Minings	1907
Journeys of Observation (Colorado and Mexico)	1907
Recent Cyanide Practice (2nd edition by Bain in 1910 and 3rd edition by von Bernewitz in 1913)	1907
Sampling and Estimation of Ore in a Mine	1907
Technical Writing (1st edition)	1908
Stamp-Milling of Gold Ores	1909
Through the Yukon and Alaska	1909
Technical Writing (2nd edition)	1910
Flotation Process	1916
Concentration by Flotation	1921
Technical Writing (3rd edition)	1931
A History of American Mining	1932
Man and Metals (ancient and modern)	1932
Retrospect (1864-1937)	1937

The foregoing list shows a considerable catholicity of mind and great ability and activity during a period of 35 years, disregarding the host of articles and editorials in the three journals on which T. A. worked as editor, and in the *Transactions* of the I. M. and M. and A. I. M. E. meanwhile. His writings inspired others and have been a decided influence in improving the mode of expression of the whole mineral industry. Rickard always considered the miner as a pioneer of civilization, which is true, and wrote to that effect, including a stirring poem entitled "The Pioneer."

In *Retrospect* will be found a full account of a full life by a man who is yet to the fore.—M. W. von Bernewitz.

MINERAL RAW MATERIALS. Prepared by the staff of the Foreign Minerals Division, United States Bureau of Mines. McGraw-Hill Book Company, Inc., New York, N. Y., 1937. Price \$5.

ROWSING realization of the importance attaching to minerals as strategic raw materials in the world economy makes this new authoritative book most valuable and welcome.

Without attempting to delve into

the difficult subject of reserves or potential sources, the principal purpose of the book is to show clearly and simply the present world sources of supply of the principal minerals and to portray the interdependence of nations for supplies of mineral raw materials requisite for the maintenance and development of domestic industries. Authenticity of the material is insured through its preparation by well trained specialists in the Foreign Minerals Division of the U. S. Bureau of Mines, with ample cooperation and help from consular authorities of the Department of State.

The book is divided into two main sections: Part I consists of a survey by minerals, showing production by countries, industrial uses, substitutes, world production (1932-1934) and world trade during 1934 for each of 32 principal minerals (16 metallic and 16 nonmetallic). Simple charts and maps for each mineral assist greatly in visualizing world production distribution, imports, exports, and apparent consumption during 1934. Part II is a survey of the mineral situation in the 12 principal industrial nations, showing production and import trade tables, outlining measures adopted by some countries to assure adequate supplies of minerals for their industries, and pointing out the effect of such measures on international trade.

Minor criticisms that may be made include the failure to have included molybdenum among the minerals considered when space was devoted to such a minor ore as vanadium; and heading a chapter "Pig Iron and Ferro-Alloys" when not a single reference to ferro-alloys is made in the text and tables that follow.

MINES REGISTER (successor to *The Mines Handbook* and *The Copper Handbook*). Volume XIX. Mines Publications, Inc., New York, 1937. 1,340 pages. Price \$25.

IT has been six years since the last issue of *The Mines Handbook* appeared, and during that time great changes have taken place among the nonferrous metal mining companies in the Western Hemisphere—the field covered by the volume.

The new edition is a complete revision of the 1931 volume, containing descriptions of more than 4,000 active mining companies and references to more than 15,000 inactive ones. Many new features are included, among which are: An enlarged statistical section on nonferrous metals dealing with

production, consumption, imports, exports, and prices; an alphabetical list of officers and directors and the companies with which they are connected; an alphabetical list of consulting and mining engineers, managers, superintendents, and purchasing agents and their companies; a special section devoted to security prices of mining companies; and a Buyers Guide index of mining machinery, equipment and supply manufacturers.

General information and financial data are brought up through 1936. Several mistakes to which attention is called by the correction on page 1108 may cause the reader to lose some faith in the authenticity of other data contained therein.

COKE FROM ILLINOIS COALS. By *Gilbert Thiessen, Illinois State Geological Survey, Bulletin No. 64, 1937. 235 pages.*

THIS study presents the results of certain investigations undertaken by the Illinois Geological Survey in an effort to determine whether and in what manner Illinois coals could better participate in the coking coal market—a market furnishing a much smaller outlet for Illinois coals than is the average for the entire country (some 15 percent of the entire production).

Detailed discussion is given of the economic position the Illinois coals occupy in the different classifications for coking purposes, a brief account of coke manufacture and the history of coking in Illinois, and a statistical review of the industry, together with descriptions of laboratory analytical methods. Not intended to be an exhaustive treatise on coke manufacture, the bulletin contains a wealth of useful data. Among other conclusions the author finds that "(1) Under suitable conditions coke suitable for domestic and some industrial fuel can be made from most of the coals occurring in Illinois. (2) The domestic fuel market appears to be the best and to be a growing outlet for coke made from coals from the eastern interior coal basin, of which most come from Illinois."

Anthracite Research Conference

A conference on the technology and utilization of anthracite will be held April 29-30 at Lehigh University, according to a recent announcement by President C. C. Williams.

Wheels of Government

(Continued from page 60)

cite industries are well known. Iron ore, too, has recently met increased freight rates in a complex transportation situation which involves rail haul at the head and foot of the Great Lakes, with water haul and loading, unloading and storage problems at the terminals.

Coming Session

In January the hearings on the Revenue Bill of 1938 should proceed with dispatch, perhaps by the 15th of the month, and mining men will follow with interest the work on the undistributed corporate earnings tax, capital gains and losses, the carrying forward of losses, and the treatment of percentage depletion. It is important that all of these features be carefully followed as they are subject to action at many points in the course of the Revenue Bill through the House and the Senate. Some form of labor legislation will undoubtedly be proposed, although enactment of arbitrary wage-hour control is considered unlikely. Stream pollution, regional planning and anti-trust measures are all in the picture, and there will be much time for Congressional action before the departmental supply bills can be considered and passed. If no serious international situation develops, the Congress could leave Washington by the first of June although the experience of past years, indicates that prophesies are unsafe.

Effect of Chemical Treatments on Burning Coal

Chemical mixtures designed for the treatment of coal, with a view to making the coal burn better, really have little effect on the combustion of the fuel, it has been found by engineers of the Bureau of Mines, Department of the Interior, after making exhaustive tests. The results of the investigation are detailed in a bulletin just published by the Bureau.

The Bureau of Mines has continually received inquiries about the efficacy of these products, and in response to these requests, the Bureau took up this subject of investigation and thoroughly tested, both alone and in mixture, all the chemicals known to have been marketed for this purpose, and many others, including water and

chlorine. The chemicals were applied to a wide range of bituminous coals and to high-temperature and low-temperature cokes. The untreated and treated fuels were burned, under carefully controlled conditions, in overfeed and underfeed fuel beds at rates of burning varying from 1 to 50 pounds of fuel per square foot of grate per hour.

The tests of this investigation and the deductions from them show that the possible fields of application of the pretreatment of fuels with any chemical are extremely limited. The effects of light treatments of the order of 4 lb. of chemical alone per ton of fuel, apart from the water that might accompany its use, were so small under any conditions of burning that they could not account for the improvement that users of treatments in this or smaller amounts have believed they observed in service. The effects are about proportional to the amount of treatment applied. No efficacy was found for a mixture of chemicals, and each ingredient seemed to act in proportion to the amount that was present. Too much chemical applied to the surfaces of a fuel smothered it and hindered ignition and burning. The tests also showed that any changes that treatments can make in the burning of coal or coke decrease in magnitude as the rate of burning increases, and that differences are small at rates of burning higher than 10 to 15 lb. of coal per sq. ft. of grate per hour, even with treatments as high as 40 lb. per ton of fuel.

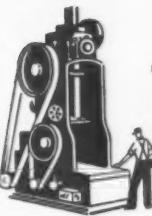
The results of these investigations are given in Bulletin 404, "Burning of Coal and Coke Treated With Small Quantities of Chemicals," by P. Nicholls, W. E. Rice, B. A. Landry and W. T. Reid.

Useful New Publication

Current Titles is the name of a new monthly periodical which lists the tables of contents of important English language periodicals throughout the world of the current month in the fields of Engineering, Chemistry, Physics, Geology, and Technology. Under the latter heading are included selected contents of the leading trade journals of all industries in which engineers, physicists, chemists, and geologists are usually employed.

It is published by *Current Titles* from *Engineering Journals*, 928 Broadway, New York, N. Y.; price is 30 cents per copy or \$3 per year.

With the MANUFACTURERS



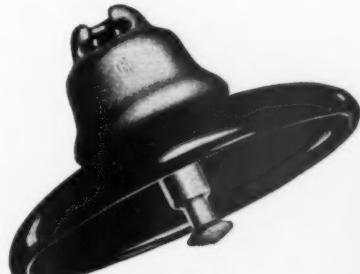
Suspension Insulators

Two rugged suspension insulators, one of petticoat design and one with a smooth disc, have been announced by the Ohio Brass Company, Mansfield, Ohio. These insulators, known as Huskitypes, are provided with high impact resistance to minimize breakage from various forms of missiles and from possible rough handling during shipment and installation.

The petticoat-type is intended for use on lines which are subject to rock throwing and which demand an insulator with standard flashover values



and full leakage distance. The other type, designed to deflect missiles from its smooth under surface without damaging the insulator, is for use on lines which are subject to gun fire.



The elimination of the petticoats on the under side of this unit lowers the dry and wet flashover values only slightly from standard values.

Although these insulators are special types, they possess the same mechanical and electrical characteristics as the

standard O-B suspensions. The cap and pin return to normal position after repeated cycles of mechanical and thermal loading. Relief coatings and correct stress distribution prevent cumulative thermal stresses. Hardware has a zinc coating alloyed to the base metal for corrosion resistance. Electrical stability is provided by high puncture values, adequate leakage lengths and freedom from corona and contamination influences.

Both types have a 10-inch disc and a 15,000-lb. M. & E. rating, and are available with either a 5 or 5 $\frac{3}{4}$ -inch spacing. The 5-inch units have a socket cap and ball pin, while the 5 $\frac{3}{4}$ -inch insulators can be furnished with a socket cap and ball pin or a clevis cap and pin.

with creosote, to which are bolted standard No. 2 Bethlehem steel ties of the same length.

This combination of wood and steel is said to unite the labor-saving, removal, and gauge-retaining advantages of the steel tie with the opportunity for ballasting, tamping and permanent track alignment provided by the depth of the wood tie. The beam strength of the wood portion has the added value of reinforcing the steel tie, and its depth supports the track above possible bottom moisture.

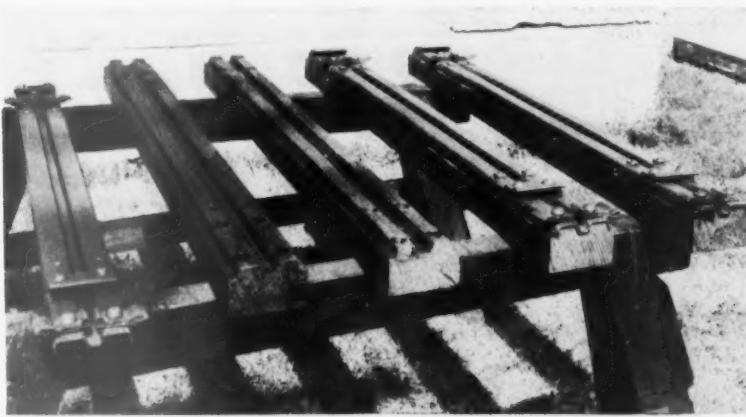
Hanna Coal Company has been using "Armoored" treated ties for some time at its Willow Grove mine in eastern Ohio. This experience has shown that the ties keep the track anchored and in alignment throughout the life of the working section. Cost figures show a reduction in labor and replacement amounting to almost half the expenditure when untreated wood ties are used.

Indication of the severe test which the "Armoored" treated ties have received is contained in the fact that the Willow Grove mine produces 4,000 tons of coal a day, with 18 seven-hour shifts a week. Each butt entry has 36 rooms and produces about 90,000 tons of coal over an average life of three months.

"Armoored" Treated Ties

Hanna Coal Company reports almost 50 percent lower labor and replacement cost for butt entry track ties with the use of "Armoored" treated ties which have been developed by The Wood Preserving Corporation, a Koppers Company subsidiary.

The ties are made with 3 x 5 x 52-inch oak timbers, pressure-treated



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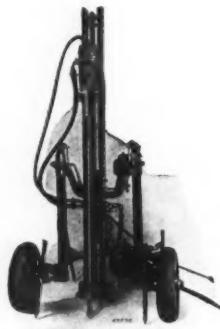
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FM Wagon Drill

Ingersoll-Rand Company, 11 Broadway, New York City, announces Bulletin 2253-A describing its new FM-2 wagon drill.

A distinctive feature of this new light-weight drill, according to the manufacturer, is a ratchet, by means of which one man can quickly raise or lower the drill guide on the uprights. This drill has the same automatic, positive feed at any angle, which proved so successful on the previous model. This air motor controlled-pressure feed provides an infinite range of feed pressures from 1 to 1,000 lb. A worm gear, which transmits power from the air motor to the feed chain, is self-locking, eliminating all thrust and shock to the motor, and prevent-



ing the drill from dropping or jumping forward.

The FM-2 wagon mounting uses the same fast and powerful drills as the larger wagon drills and will accommodate a 6-ft. steel change. Twenty-ft. steels are easily handled. The FM-2 is built for continuous, heavy duty operation, yet it is light and has the versatility of a jackhammer.

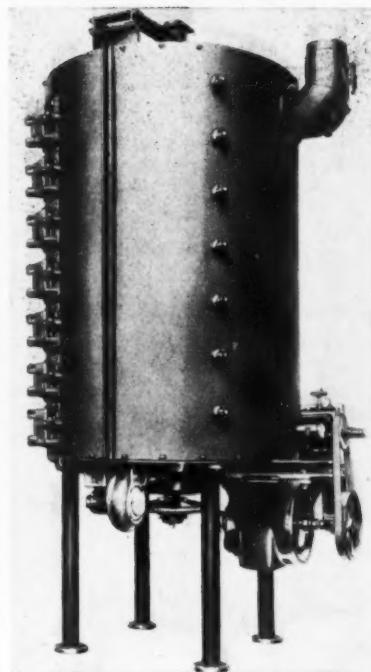
Copies of Bulletin 2253-A may be obtained from any Ingersoll-Rand office.

resigned his position as secretary of the company, also was elected a member of the Finance Committee. Mr. H. F. Smith, secretary to the president, was elected secretary of the company. These elections bring the total membership of the Board of Directors to sixteen. The Board now includes representatives of all main divisions of the company.

Steam-Jet Ejectors

Worthington Pump and Machinery Corporation of Harrison, N. J., announces the publication of a new bulletin covering their improved single stage steam jet ejectors. This bulletin contains information on typical applications of these machines, materials used for standard and special construction and dimensions of the various sizes.

Uninterrupted service at higher overall efficiencies is assured by the new design of this machine, which incorporates an internal steam strainer in the nozzle head. Other claims made for this unit include low suction entrance losses due to the streamline



additional equipment are being erected. Capacity is to be raised from the present one ounce to three ounces per year.

This refinery which receives the pitchblende concentrates by air, water and rail from Port Radium, Northwest Territories, some 4,500 miles away, will now have sufficient capacity to process approximately 900 tons of concentrates per year to recover radium worth between \$2,000,000 and \$2,500,000, as well as valuable quantities of silver and uranium.

The first process in the recovery of the minerals from the concentrates is that of roasting. A Bethlehem Roaster will be employed and will treat about 5 tons per day. It employs distinctive features which provide accurate control of rate of feed, rabbling, roasting time, roasting temperature and amount of oxidizing air admitted. These features are highly desirable in the treatment of such a complex ore as pitchblende.



design of the suction passages; low initial cost and maintenance; extreme simplicity; minimum weight; small space requirements; no moving parts; and no lubrication required. When writing for this bulletin refer to W-205-B6.

Hercules Elects Four New Directors

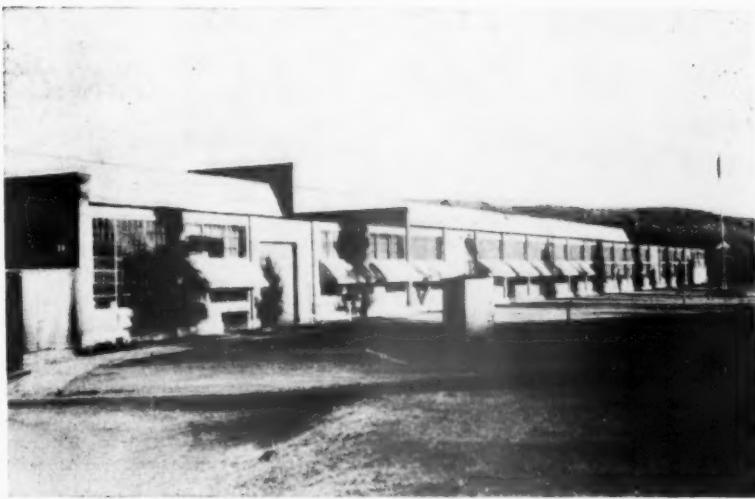
At the November monthly meeting Hercules Powder Company elected four new members to the board. They are W. R. Ellis, general manager, Explosives Department; Lloyd Kitchell, general manager, Virginia Cellulose Department; P. W. Meyerling, manager, Foreign Relations Department; and E. B. Morrow. Mr. Morrow, who

Bethlehem Roaster At Port Hope

Another chapter is being written to the story of radium. Production at the Port Hope, Ontario, refinery of the Eldorado Gold Mines, Ltd., is to be increased. New buildings to house

New G-E Plastics Plant

The Plastics Department of the General Electric Company has recently opened a new molding plant at 1 Plastics Avenue, Pittsfield, Mass., which is entirely devoted to the research, development, design, and manufacture of molded plastics prod-



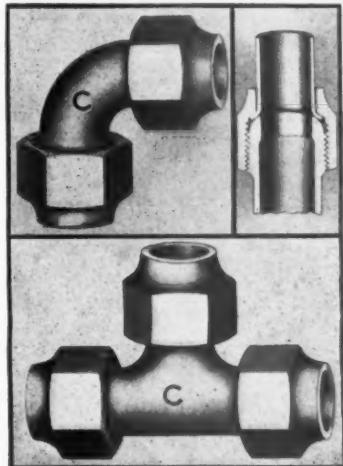
New plastics plant of General Electric Company at Pittsfield, Mass.

ucts. Representing an investment of approximately one million dollars, the new plant is the scene of the major part of its plastics activities.

The manufacture of plastics parts by General Electric started over 40 years ago with the production of a few component parts for use on G-E products. In the development of the plastics art and the tremendous increase in the use of plastics parts has come a growth of similar proportions in General Electric activities in this field, until the business has trebled within the last five years.

Brass Fittings

Brass fittings for flared copper tubing, discontinued a few years ago,



Upper left—Brass 90° elbow for flared copper tubing. Upper right—Section of flared copper tubing. Bottom—Brass tee for flared copper tubing

have been reinstated as a regular line of Crane Co. products. These fittings include elbows (90 and 45 degree), tees, couplings, reducers, adapters and flanging tools, in sizes $\frac{3}{8}$ to $1\frac{1}{4}$ -inch.

Cast parts of these fittings are made in steam brass, while all compression nuts are forged brass, and the flanging tool is made of steel. These fittings are rated at 175 pounds water working pressure.

Air Line Freeze Preventive

A new system of air line and air tool freeze preventive known as "Frosto" is being marketed by the Sullivan Machinery Company to supplement "Tanner Gas" which has proven its merits on construction, industrial and mining operations. Frosto has been developed particularly for industrial applications and wherever electric current is available for its operation. In operation, the Frosto is vaporized in a "vaporizer" and is fed into the compressed air line near the compressor as fast as necessary to prevent freezing of water vapor in the compressed air lines and air tools.

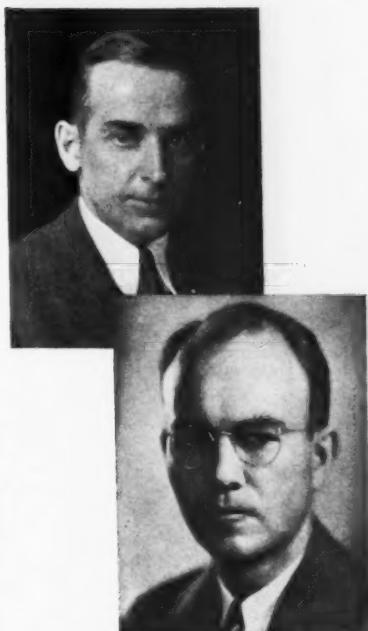
This system is claimed to be very effective and economical, with small current consumption which is thermostatically controlled. Only about a quart of Frosto is required to treat 100,000 cubic feet of free air under the worst conditions of temperature and humidity.

Bulletin descriptive of Frosto and Tanner Gas freeze preventive systems can be had on application to Sullivan Machinery Company, Michigan City, Ind.

Link-Belt Personnel Changes

Link-Belt Company recently announced the following changes in the personnel of its management and sales organization:

Harold L. Hoefman has been appointed manager of the Link-Belt plant, warehouse and sales office at Atlanta, Ga., to succeed Mr. I. H. Barbee, who died on November 4. Mr. Hoefman brings a wide experience to his new position, having started with the company 17 years ago as a draftsman in the Pershing Road, Chicago plant engineering department. After working in several divisions of this department, he was transferred to the sales department, serving first as sales engineer at the Chicago office, then at



Upper—Harold L. Hoefman

Lower—Laurence O. Millard

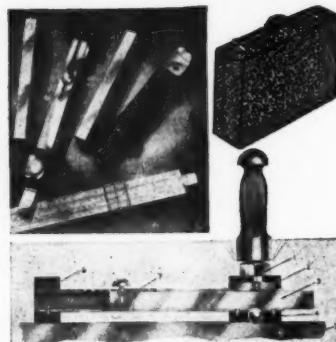
Kansas City; Dallas; and Indianapolis. Since 1935 he has been manager of the Link-Belt warehouse and sales office in Detroit.

Laurence O. Millard has been appointed district sales manager at Pittsburgh. Mr. Millard joined the Chicago plant engineering department in 1913, and was transferred to the Cleveland office as sales engineer in 1923. In 1929 he returned to the Chicago plant as a specialist in power plant coal and ashes handling machinery sales. Since 1933 he has been district sales manager at Cleveland.

M. S. A. Explosimeter

Mine Safety Appliances Company, Braddock, Thomas and Meade Streets, Pittsburgh Pa., recently placed on the market the M. S. A. Explosimeter, a pocket-sized instrument for quickly and easily determining the presence of combustible gas hazards.

The M. S. A. Explosimeter is designed to meet the demand of operating men for an instrument that can be carried about on the job and operated by any workman. It shows whether gas concentrations are within or above the explosive range. In size and weight, the M. S. A. Explosimeter compares with a small folding camera,



and can be carried either in a pocket or on a shoulder strap.

Copies of an interesting and well illustrated bulletin on the M. S. A. Explosimeter, just published, are available either by writing this magazine or by addressing the manufacturer direct.

Portable Brinell Hardness Tester

A light weight, portable Brinell instrument that can be carried easily right to the job is said to simplify metal hardness tests in the field, remote from laboratory facilities and around industrial plants. According to the manufacturer it can be used in close quarters and can be applied to parts and equipment the size of which has heretofore made testing difficult, expensive and sometimes virtually impossible. It eliminates both the necessity of dismantling equipment to be tested and transporting specimens to the laboratory.

Known as the Telebrineller, the instrument was developed by one of the oldest and largest railroad rail maintenance organizations in the United States to check and control the rebuilding (welding) and heat treating

of rail ends on the right-of-way. Its simplicity, convenience and the ease with which it can be carried are indicated by the fact that the combined weight of the outfit and carrying case is only 6½ pounds. According to the manufacturer it is not affected by hot or cold weather and is built to stand hard use. No training or previous experience, it is claimed, is necessary to operate it accurately.

New literature describing the Telebrineller and its use may be obtained from Teleweld, Inc., Railway Exchange Bldg., Chicago, Ill.

Electric Soldering Pliers

In answer to the increasing demand for a smaller low capacity soldering unit, that would heat electrically, sweat joints without unsweating adjacent connections, and eliminate the open flame hazards, the Ideal Commutator Dresser Co., 1963 Park Avenue, Sycamore, Ill., has introduced the new No. 2 "Midget" Type Thermo-Grip Pliers.



This tool has been designed especially for soldering small objects and for work in restricted spaces and for ease of operation. The small power requirement of 300 watts permits use of the unit on any standard lighting circuit without danger of overloading the circuit or burning out fuses.

Made of cast bronze, the pliers are

shaped so that they will fit into restricted spaces. The jaws are hinged at the back and have a spring, which holds them normally in the open position. Further information can be obtained by writing the manufacturer.

Wallace Directing Crane Co. Research

Formation of a division of engineering and research by Crane Co., Chicago, with L. W. Wallace, head of engineering research for the Association of American Railroads, as director, effective December 1, has been announced by Charles B. Nolte, president of Crane Co. The new Crane division will comprise the existing division of research and development and the product engineering department of the company.



L. W. WALLACE

Mr. Wallace, who will be directly responsible to President Nolte, will direct the originating of new lines of products, the development of inventions and patents and the maintenance and improvement, if possible, of existing Crane products.

These activities will include the operation of chemical, metallurgical, oil, steam, air, hydraulic, heating, plumbing and other research laboratories. The enlargement of the laboratories and the installation of new laboratory equipment are about completed, having been in progress for some time.

Salmon & Cowin Move

Salmon & Cowin, Inc., are now in their new modernistic office and shop located at 930 Second Avenue, Birmingham, Ala.

CATALOGS and BULLETINS

• BEARINGS. *New Departure*, Bristol, Conn. Bulletin "Sealed!" describes advantages of N-D Seal Bearings. 16 pages.

• BELT CONVEYORS AND BUCKET ELEVATORS. *Stephens-Adamson Manufacturing Company*, Aurora, Ill. Catalog No. 47 describes the complete line of S-A belt conveyors, carriers, trippers, pulleys, shafts, bearings, belting and bucket elevators for handling bulk materials. This attractive and informative bulletin tells a complete story, with profuse illustrations, of modern methods of handling bulk materials with detailed specifications and diagrams of all equipment described, and convenient new plastic-type binding and index. 124 pages.

• COMPRESSORS. *Sullivan Machinery Company*, Michigan City, Ind. Catalog "Sullivan Plus Portable Compressors" fully describes complete line of two-stage portable air compressors, with specifications and data of interest to those concerned with application of air compressors and air tools to construction and maintenance work. 24 pages.

• CONCENTRATING EQUIPMENT. *Hardinge Company, Inc.*, York, Pa. Bulletin No. 41 discusses operating data of milling equipment under wide variety of conditions specified in detailed tables. Operations include grinding, classifying, thickening, weighing, feeding and drying. 12 pages.

• CRUSHERS AND PULVERIZERS. *Gruendler Crusher and Pulverizer Company*, 29th and North Market, St. Louis, Mo. Bulletin describes company's complete range of crushing and pulverizing equipment, with specifications. 40 pages.

Universal Crusher Company, 625 C Avenue, N. W., Cedar Rapids, Iowa. Bulletin No. 100 describes Universal bronze bearing jaw crushers. 6 pages.

Bulletin No. 200 presents details with specifications of roller bearing jaw crushers. 4 pages.

Bulletin No. 300 gives details of roll crushers with a discussion of comparative advantages of roll and jaw reduction crushers. 4 pages.

• CUTTER ARMS AND CHAINS. *Goodman Manufacturing Company*, Chicago, Ill. Pamphlet presents detailed specifications of Goodman cutter arms and cutter chains, with brief pictorial presentation of their manufacture. 4 pages.

• DIATOMACEOUS EARTH. *Johns-Manville*, 22 East 40th Street, New York, N. Y. Pamphlet describes diatoms and origin of diatomaceous earth, and details uses to which this pure material (celite) is put. 24 pages.

• DRILLS. *Sullivan Machinery Company*, Claremont, N. H. Bulletin "Hitting the Mark" describes new S-9 and S-20 Sullivan stoppers. 4 pages.

E. J. Longyear Company, Minneapolis, Minn. Bulletin No. 50 describes applications and specifications of Junior Air Diamond Core Drill. 8 pages.

Bulletin No. 52 presents advantages and specifications of Pioneer Straitline Diamond Core Drill and Castset Diamond Core Bits, the latter presenting a new idea in bortz setting. 6 pages.

Bulletin No. 53 describes Longyear U G Upright Diamond Core Drills and the U G Cadet Drill. 4 pages.

• DUST. *Mine Safety Appliances Company*, Pittsburgh, Pa. Bulletin "Pertinent Questions and Answers Concerning Dust" gives 73 questions that commonly arise concerning the nature and effects of dusts, and answers to these questions in simple and so far as possible nontechnical language. 16 pages.

• EXCAVATING. *Bucyrus-Erie Company*, South Milwaukee, Wis. Folder "Excavating" describes with illustrations advantages of two- and four-wheel scrapers.

• FANS. *The Northern Blower Company*, West 65th Street South of Denison, Cleveland, Ohio. Bulletin 1002-3 describes the Norblo Direct Driven Exhaust Fan. 4 pages.

• FIRE FIGHTING EQUIPMENT. *Solvay Sales Corporation*, 40 Rector Street, New York, N. Y. Pamphlet "All's Well" describes constitution and uses of Solvay calcium chloride in fire fighting. 22 pages.

• HOISTS. Bulletin "Sullivan Shaft Hoists" describes advantages of complete line of portable shaft hoists, together with detailed specifications. 16 pages.

• MINE CARS. *C. S. Card Iron Works Company*, Denver, Colo. Folding pamphlet illustrates different types of cars, trucks, and wheels.

• RESISTANCE GRADIOMETER. *Heiland Research Corporation*, 700 Club Bldg., Denver, Colo. Folder R.G.-1 describes geophysical methods for foundation and water supply problems, and gives the principles of the resistance gradiometer, instructions for operation, application, and results. Value of the instrument in determining depth to bedrock and water is emphasized. 6 pages.

• SAFETY PROGRESS. *Mine Safety Appliances Company*, Pittsburgh, Pa. Well illustrated bulletin tells the story of progress in mine and industrial safety made through well planned research, together with detailed presentation of representative MSA safety equipment. 30 pages.

• SCREENS. *The W. S. Tyler Company*, Cleveland, Ohio. Bulletin 725 describes various types of screens and screening machinery. 4 pages.

• VIBRATING EQUIPMENT. *The Jeffrey Manufacturing Company*, Columbus, Ohio. Catalog 650 describes Jeffrey-Traylor electric vibrating equipment, giving a concise explanation of the principles of design and operation, types, sizes and specifications of standard vibrators, and briefly sets forth the conditions and results on a few of the many processing jobs to which the equipment has been successfully applied. Profusely illustrated with many diagrams. 84 pages.

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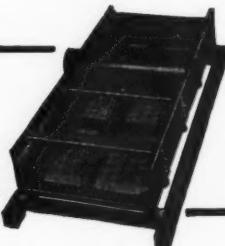
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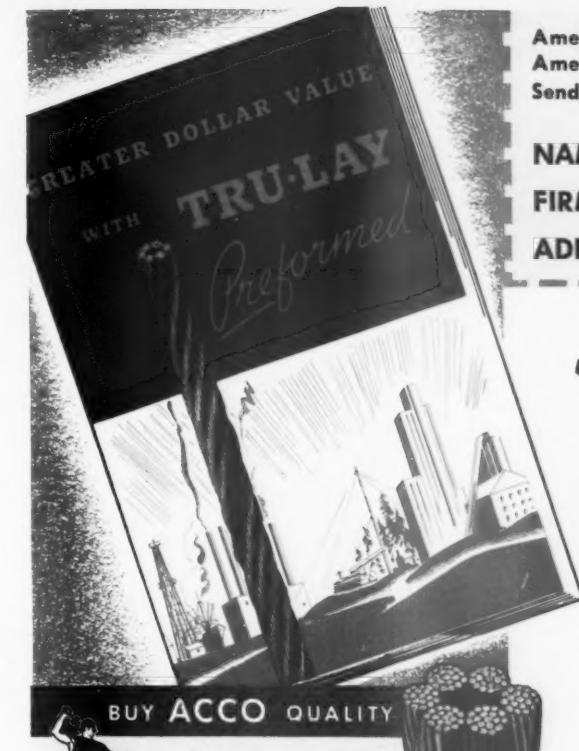
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It is a fact—that the safety and protection afforded by this safety equipment team reduces the number and severity of accidents, lowers compensation costs and lost-time charges. That saves you money!

It is also a fact—that the brighter, better-directed illumination of the Edison Lamp, and the more complete head protection given by M.S.A.

Skullgards, increases the efficiency and morale of the men. That *makes* you money!

Let us show you how Edison Electric Cap Lamps can be installed in your operations without capital outlay—and quote you prices on M.S.A. Skullgards in the hat or cap styles that best meet your needs. • Better still, let us arrange a demonstration at your convenience—*write today!*



**EDISON ELECTRIC CAP LAMPS
M-S-A SKULLGARDS**

MINE SAFETY APPLIANCES COMPANY
BRADDOCK, THOMAS & MEADE STREETS, PITTSBURGH



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